AMERICAN VETERINARY REVIEW,

NOVEMBER, 1894.

NOTICE.—Please address all communications regarding matter for publication, books for Review, Exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIAL.

SOCIETÉ CENTRALE DE MEDECINE VÉTÉRINAIRE.—We have received a notice of and invitation to be present at the celebration of the fiftieth anniversary of this society—the Veterinary Society of France at least, if not of the world—for among its members are found the names of veterinarians from every part of the globe.

It was with much regret that we could not accept of the kind call sent to us by the officers of the society—no doubt when among the exercises of the day we read of a discourse by President Sanson, of one by Mr. Leblane on the life of Henry Bouley, of one of Prof. Arloing and one from Prof. Degives, the cream of the *èlite* of the continental veterinary world, we felt how great our loss would be and how great our pleasure would have been, but how could we help it.

We hope, however, to receive some concise *comptes rendus* of this great meeting, and to present them to our readers, for it matters little whether this is a celebration in France—it is to all veterinarians who appreciate the value of the services rendered by such organization which has been recognized as one of

national public usefulness, a so-to-speak international celebration. We feel certain that when any of our national veterinary association reaches her fiftieth birthday, our colleagues in Europe and France will join us in their wishes as heartily as we do in the celebration of their own.

TO ALMA-MATER RESCUE.—When one enters a school from which he hopes to obtain a degree, a name, there is no doubt that he contracts towards that school moral obligations of great importance. And when once he has received his diploma, he, so to speak, becomes one of the family and the glory, the reputation, the name, *yes* the life of his alma-mater, must become one of his future anxieties while he is engaged in the efforts of the "struggle for life."

Truly there are many instances where the well meant promises are soon forgotten. No doubt there are some who, once free from school attendance and duties, are too ready to forget the contracted obligations; we mean moral obligations—but those we believe are the exceptions—and we personally know of one occasion where alumni proved themselves worthy of a better result in their endeavor in behalf of their alma-mater.

An example of a similar effort has recently been called to our attention, and it is so worthy that we feel it our duty to mention it to our readers.

We refer to the action of the Huron and Perth Veterinary Medical Association societies who have sent us the following invitation which speaks for itself and which we sincerely hope will meet with success in its undertakings:

LONDESBORO, September 1, 1894.

DEAR SIR.—We, the members of the Huron and Perth Veterinary Medical Association, have decided to hold a union meeting in the City of Stratford, in the City Hall, on the 27th and 28th of September, 1894, for the purpose of making a united effort toward procuring legislation favorable to the veterinary profession in this province. The assumption of the control of the Ontario Veterinary College by the government; the appointment of the board of examiners for the said college by a medical council composed of qualified veterinarians, resident and practicing in Canada; and furthermore, the raising of the college standard, and thus exclude illiterate persons from the ranks of the profession.

We respectfully ask you to give this matter your serious consideration. You, no doubt, recognize the evils existing under the present system. Believing that you do, we ask you to attend this meeting and assist us in securing your rights and ours.

There will be two sessions, the first on the evening of the 27th of September, at 8 o'clock P. M.; the second the following morning at 10 o'clock A. M.

Very truly yours,

W. R. CARR, V.S.. *Sec'y for Perth*,
Kirkton P. O.

J. J. WALKER, V.S., *Sec'y for Huron*,
Londesboro P. O.

The action of these societies deserves the congratulations of the veterinary profession and commands the support of all the alumni of the Toronto school. To place the Ontario Veterinary College under governmental control, would not only mean a change in her management, not only an immense progress in veterinary education, but would be a well deserved recognition of Prof. A. Smith's work in behalf of the profession—a recognition that the worthy principal ought to be proud and anxious to obtain.

A FRIEND'S RETURN.—It is always gratifying to meet again after a long separation one for whom you were used to watch, and whose company you enjoyed, and how much greater was the satisfaction when that friend came back improved generally in appearance and in constitution.

Such has been our feelings, and we are sure will be those of many, when like us they will receive the number of the *Journal of Comparative Medicine and Veterinary Archives* for September.

You are welcome, old friend, and let us hope that the introduction to your editorial staff of the young and enthusiastic blood that we all know well, will prove to you the lease of a long, useful and uninterrupted existence, and that we may enjoy your company for ever.

COMPLIMENTARY NOTICE.

"The . . . . Veterinary College, an advertisement of which appears in another column, will commence the session of 1894-95 on October the ——, and we can assure our readers that the instructions imparted at this thriving institution are second to none on the continent of America, and indeed equal those of the leading colleges of Europe."

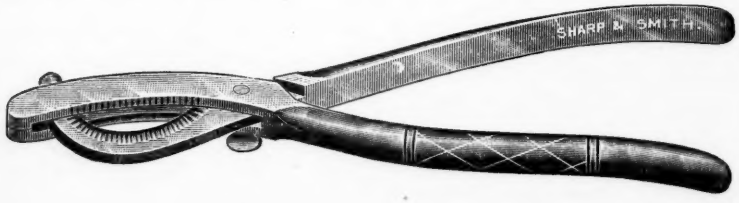
This was sent to us by the principal of that institution with request to insert it in the REVIEW, as a complimentary notice, red ink printing across the original.

Of two things: we knew the claims to be correct, or to be erroneous. In the first case, it would have been unnecssary to publish a fact which all of us veterinarians would have known of. In the second case, the writer must have had a mighty poor opinion of American veterinary journalism to entertain the idea that because for the price of an "ad" an editor would lower its character as to recommend what he knew to be an untruth.

No, Mr. Principal, we cannot comply with your request, even if you draw your "ad" from our pages; but certainly we will never induce our candidates to veterinary education to enter your school with such a notice as the one you send us as long as there will be, as there is already, many other institutions far ahead of yours in their endeavors to bring the profession to the standing it is entitled to.

The struggle for improved education which has been inaugurated by some of our schools in North America is too severe, has required from them too powerful efforts to see the result jeopardized by inducements similar to those represented in your complimentary notice.

NEW INSTRUMENTS.—It is not common for our instrument makers to call our attention to any of the new means which may be brought out of their industry for use in our practice, and



while we may be accused of booming a firm or its products, we take pleasure in calling the attention of our readers to the *modified emasculator*, which has recently been offered by the house of Sharp & Smith of Chicago. We have not had oppor-

tunity to try the new instrument, but from what we have heard of it, it seems to answer all the purposes and gives all that its inventor promised, viz., "that it is the best on the market at present." Test it, that is the best proof of the value of the claims.

CORRECTION—*Surgical Treatmeut of the Diseases of the Hock Joint.*—Prof. Zuill sends us a correction for an omission made in the composing room in the above named article. The article was published in the July issue, and at the bottom of page 250 the following ought to be inserted between the last two words "hock lame" and the first "ness" of page 251.

ness, it remains for us to examine the chronic form of the disease.

Chronic Hock Lameness.—In this form of the disease there are two conditions which may produce lameness, and when we have an old spavin without this manifestation we may be sure that neither exists. The first and by far the most frequent causes of chronic hock lame.

ORIGINAL ARTICLES.

ADDRESS DELIVERED AT THE OPENING OF THE McKILLIP VETERINARY COLLEGE.

BY OLOF SCHWARZKOPF.

Mr. President, Ladies and Gentlemen.—Whenever a new institution of learning opens its doors to the great public there ought to be rejoicing. The diffusion of useful knowledge of whatever kind and in whatever direction adds so much to the enlightenment of the people and is always welcome. Many are the Universities, Colleges, and schools which are spread all over this great and growing country. Sciences and arts are taught liberally everywhere, and their disciples abound in numbers from one end of the country to the other.

But there is one science which, from reasons rather difficult to explain, has been sadly neglected in our country; this is the science of veterinary medicine and surgery. Not further back

than thirty years a veterinary college was unknown in the United States. The first attempt to establish such a college in Boston proved a failure. In these times that peculiar empiric, termed "horse-doctor" in Shakespearian language had his sway, and applied his crude and cruel devices in the treatment of the various diseases of our domestic animals, a treatment which so often has called out the disgust and contempt of intelligent people.

Not until the disease known as pleuro-pneumonia made its inroads into fine herds of cattle of our country, mercilessly destroying many thousands of them every year, did the public and state and national authorities realize the need and recognize the value of a veterinary surgeon with a scientific education. At this time several well prepared men went abroad to study at the old veterinary schools of Europe, and returning they, with a few foreign veterinarians, laid the foundation for the veterinary profession of this country. Soon one veterinary school after another came to life, and to-day some of our proudest Universities, such as Harvard, McGill, and the University of Pennsylvania are anxiously improving their veterinary departments. There are other veterinary schools started and maintained by private enterprise. Two or three of these are first-class schools, but the most of them are of a very inferior type. This is the status of veterinary education as it is at present.

One need not be a prophet in order to predict a bright and prosperous future for veterinary science in this country. Its usefullness has been sufficiently demonstrated and its rapid development has overreached the highest expectation; still of late some unexpected events have given to this science a stronger impulse. The energetic stamping out of pleuro-pneumonia by the veterinary advisers of our national government is being favorably commented upon all over the world. The passing of a law by Congress for the inspection of meats for exportation to Europe, has given the American veterinarian an official recognition. The execution of this law is a practical success and an incalculable benefit to a vast home-industry. But nothing has

been of greater importance to veterinary science than the discovery of Robert Koch's of world's fame, that tuberculosis or consumption is an identical disease in man and animals, and that the disease is disseminated from animals to man by the use of milk and meat. This fact, grave as it is, is apt to bring about a great change in sanitary science. Already now many of our great cities are hurriedly engaging scientific veterinarians to inspect and superintend their dairies and slaughter-houses in order to protect the health of the citizen. Thus the point has been reached, where the veterinarian steps in as a sanitarian, not only preserving the health of domestic animals, but also guarding the well-being of the human race as well.

In the face of these facts alone, if not from several others, it is evident that there will be in the future a good demand for the thoroughly educated and competent veterinarian, and any veterinary college which can supply such demand will be in demand in itself.

This college which opens its doors to you to-day, young gentlemen, will strive to be one of higher veterinary education. Our facilities are grand. We are located in a world-renowned city, the heart of a great nation. We have a college building which already now in its incomplete form, is superior to any in the country. While in our infancy we open with better facilities for work, than any other college has ever done before us. But above all the spirit of the man who is the genial founder and father of this new institution, will surely guide us along the path of wise pursuits. I cannot refrain at this moment to publicly express my admiration for the man who had the energy and enterprise to bring to life this new college for Dr. M. H. McKillip. With clear sight he has outmapped his plans and with the energy which is his he has pushed them to perfection. The greatest appreciation and the thanks of the whole veterinary profession, of which you are so worthy a member, are due you, Doctor, for your undertaking. May this college become the best in the country, and so success crown your effort.

To you, gentlemen, of the faculty, I wish to appeal for your

generous assistance and faithful performance of the work which we have carefully laid out as our course of study. You are men who have had the advantage of higher education, and the experience of years of practice, such as professors should have. May your teachings be fruitful.

To you, gentlemen, our first class of students, numbering sixteen to-day, I bid a hearty welcome. You have passed a rigid entrance examination, proving that you are capable to study, and intelligent enough to follow our lectures with satisfaction and good results; that you have a sufficient degree of culture to carry yourselves as gentlemen and so preserve the good reputation which this new college bears.

Let us all then, the faculty and students, work together earnestly and harmoniously, and let us join hearts and brains to make this an institution from which true knowledge may flow.

In the name of the founder of this college, I herewith declare it open to all worthy young men who may seek the knowledge which we can give.

NEURECTOMY AS A PRACTICAL OPERATION.

By PROF. S. J. J. HARGER, of the University of Pennsylvania.

In veterinary surgery, we find a vast field which is still unexplored. We find, among the list of major surgical operations many which we perform, as it were, empirically, without inquiring what the actual results in a large number of cases are or what percentage are successful. One of these is neurectomy. The term *neurotomy* is generally misapplied. It simply means a section of the nerve, whilst the word *neurectomy*, which is the correct one, means a resection of a portion of the nerve trunk, as it is ordinarily practiced. I have always been an advocate of this operation, but not unjustly so, and have always advocated it without reservation whenever the indications called for it; in fact, so much so, as to cause sometimes a smile of amusing comment from some of my professional friends whenever I did so. I

do not propose to enter into many theoretical details on the subject, but rather consider it from its more practical aspect.

Great diversity of opinion exists among professional men as to the value and the results that are to be obtained from neurectomy. Some recommend it very indiscriminately, for all varieties of lesions, without first inquiring into the proper indications; this has necessarily militated against its application and brought it into disrepute. If the surgeon misapplies it, if he practices it when it is contra-indicated, not the operation but the operator should be blamed. Others, very ill-advisedly, discard it almost entirely, and say to the owner "better sell your horse." It is this diversity of opinion which has led me to write this paper.

Various nerve trunks are selected according to the end in view: the *tibial* nerve in stringhalt; the *sciatic* for lesion below the hock, when it is resected about four inches above the point of the hock and opposite to the anterior border of the tendo-Achilles; the *median* for lesions between the knee and the fetlock; the *plantar* and the *digital* for diseases below the fetlock. I shall only speak of the last three.

Plantar Neurectomy.—Indications. One should not be too hasty in operating, for I have often seen cases in which navicular disease, existing for several weeks to several months, was diagnosed, and recovery followed the use of a foot-bath, a mild liniment, or "turning out" for a few weeks. The typical indication is a chronic disease, with pain and lameness, but no mechanical obstruction. Two conditions must here be considered: 1. The accuracy of the nerve supply to the diseased area; 2. Is the lameness mechanical or is it the result of pain?

Neurectomy is practiced in ringbone, sidebone, contraction of the hoof, primary and secondary, inflammatory conditions of the lamina and the velvety tissues from traumatisms, laminitis, lesion secondary to street-nails, keraphilocele, quittor operation, etc. Its principle indication is the so-called chronic navicular arthritis. Any acute inflammatory condition is always a contra-indication.

Operation.—The modus operandi is well known to all of us

and hence I need not go into the didactic details of the routine surgical stages. I have used cocaine, for the last four years, instead of casting the horse. A drachm of a 4 % solution in distilled water is injected subcutaneously above the fetlock over the course of the plantar nerve. In only two instances was it necessary to throw the patient. In a double neurectomy one foot is nerved before injecting the other, to avoid the physiological effects of the drug from its absorption, which sometimes makes the horse uneasy and complicates the operation. In my experience, I have never seen the sloughing effects of cocaine, which some claim to have experienced. In this manner, the foot can be extended, placed upon a box or a stool and held by an assistant, and the nerve removed without any laborious efforts. In fact, some horses never move, even while severing the nerve.

The only instruments necessary are a pair of curved scissors, two small dissecting forceps, a bistoury, a thin probe with a sharp but not cutting extremity, a neurotome and needle and thread or silver wire. I never use a tourniquet or compression of any kind to arrest the hæmorrhage, which is insignificant when the incision is made carefully and in the proper place ; on the outside of the foot the operation is sometimes absolutely bloodless. I do not approve of the use of Dechamp's needle nor of securing the nerve with a thread. This prolongs the operation and may cause the horse to struggle. I simply pass the probe under the nerve-trunk after dissection with the forceps and then make the section. The nerve should be well isolated at the upper angle of the incision, and strong downward traction made before cutting it, in order that it does not protrude into the wound and its extremity is not involved in the cicatrix. I always use a cutaneous suture. In this manner a nerve may be removed in a fraction of a minute. As long a portion of the nerve as possible should be removed.

The only structure that can be mistaken for the nerve and only in the low operation, and even this is not excusable, is the ligamentous cord extending from the plantar cushion to the

ergot and obliquely crossing the direction of nerve in the middle of the side of the first phalanx. Drawing the thumb nail over the nerve trunk before section or the cross-section, as well as the white color and the striation remove all doubt. The connective tissue should be irritated and torn as little as possible.

Prognosis.—The *prognosis* varies with the disease for which the operation is performed. In an ordinary case of navicular disease it is favorable; in those cases in which there is an intense chronic lameness of long standing, contracted tendons and ligaments, the animal is hollow chested, and the inflammatory changes in the perforans tendon are such that the latter is weakened at its attachment to the os pedis, the prognosis is less favorable. It is *good* in ringbones when there is no anchilosis; also in sidebones in which the low operation suffices in mild cases, but the high is necessary in the aggravated forms. In laminitis the prognosis good only in very chronic cases, when the inflammatory conditions have disappeared and the deformity of the foot is not too marked. In general, the smaller the diseased area, the less acute and the less advanced the pathological alterations in the tissues, the more favorable is the prognosis. In acute or subacute, and in many instances of chronic laminitis, I would at any moment expect the separation of the hoof. Also is the prognosis more safe for the low operation than for the high. Again, consider the conformation of the foot. In flat-footed, thin-soled, low-heeled feet much predisposed to the effects of concussion and bruises, and in narrow and contract hoofs an opinion must be more guarded than when the exterior form is normal. Again, the nature of the work done by the animal, the pace and the conditions of the roads have their influence.

Median Neurectomy.—*Median neurectomy* or section of the median nerve of the brachial plexus, was first practiced by Peters, of Berlin, in 1885, in the treatment of inflammatory alterations of the tendons in the region of the canon and chronic lamenesses in the foot.

The modus operandi, which is slightly more complicated

than in the plantar operation, simply involves the same general principles of surgery and an accurate knowledge of the anatomical relation of the parts. The nerve, situated more or less deep, accompanies the posterior radial artery and vein which must not be injured. The section is made at several points :

1. On the inner side of the elbow, at the elbow joint, where this nerve passes over the internal lateral ligament; at this point the nerve is covered by the sterno-aponeuroticus muscle.

2. At the upper part of the inside of the forearm before giving off the large branch to the posterior muscles of the forearm.

3. At about the upper fourth of the forearm after giving off the above branch. I prefer the last point of operation, because the posterior radial muscles still retain their nerve supply which does not innervate the parts below the knee that are diseased. The incision must be made about one-half of an inch behind the internal border of the radius and about four inches from its upper extremity.

Unfortunately, I have not had much experience with this operation ; but reasoning from the anatomical nerve distribution, and this seems to be the general concensus of opinion, it is not to be recommended from our present knowledge for troubles situated below the fetlock, such as ringbone and navicular disease. It does not completely remove the sensibility on the outside half of the foot, and hence a variable amount of lameness may remain because the external plantar is partly composed of fibres from the ulnar.

The principal indications of this operation are lesions of region of the canon, such as chronic thickening, contraction and inflammation of the perforans, its check ligament, the perforatus, the suspensory ligament, and in those unremediable posterior splints involving the preceding structures. In the thickened and contracted tendons of the draft-horse it has been especially successful and rendered the horse entirely useful.

Below is the table showing the results of several operators :

TABLE.

Diseases.	Peters.	Results.	Goldmann.	Results.	Hendricks.	Results.	Baldoni.	Results.	Kull.	Results.	Pellerin.	Results.	Monssu.	Results.
Strain of tendons	1	cured									5 double	cured	7	6 cured 1 incomplete
" & lesions of pastern	1	"					2	1 cured 1 not			3	incomplete	1	incomplete
Sidebone			1 Int. side	cured			6	1 improved 4 not imp. 1 cured	1					
Ringbone	1	"	1	"			3	2 cured 1 improved		cured				
Navicular disease	2	"	14	13 cured 1 lame in 4 mos.	2	1 accident 1 no knowledge	1	cured						
Chronic lameness from street nail			1	cured										

Some of the above cases have been followed as long as a year and over, and the animal was still able to do his usual work.

Complications and Seqnelæ of Plantar and Digital Neurectomy.—Injury to collateral artery of the canon and the digital arteries aud veins or the metatarsal veins may result in degeneration of the foot.

1. Recurrence of the lameness may take place in from one month to several years. In fact, the horse may not go sound at any time after the operation. Again the lameness may continue for some weeks afterwards and then disappear. This I have seen in several cases. The recurrence or continuance may result from one or more of three causes :

a. Errors in Diagnosis.—I have no doubt but what some very obscure lamenesses are often mistaken for navicular trouble, even in some of those cases perhaps, which I have classified in this paper. The animal is nerved, and the operation is condemned.

b. Recurrent Nerve Supply.—M. Arloing has demonstated in the plantar nerves of the horse recurrent fibres which establish peripheral relations between the branches of these nerves and the nerve trunks. Some of the fibres instead of terminating in peripheral corpuscles or plates in the diseased tissues, make ascending loops and reach the main trunk, through the collateral branches. Given a section of the digital nerve, the posterior terminating branch of the plantar nerve below the fetlock, the recurrent branches coming from the diseased part return by way of the collateral branches given off above the point of section, and thus a certain amount of sensation in the parts below is retained. This distribution influences the degree of lameness which remains.

c. Regeneration of the Nerve.—The nerve tissue may regenerate itself at the central end and the two extremities thus attain physiological union. The time required for this process varies according to, or at least is modified by, the length of the portion excised. After simple section, it follows in about a

month to six weeks; after excision two months to several years, an average, as generally quoted, of one to two years. The distal end becomes atrophied. The nerve regeneration is sometimes very imperfect, which may account for some cutaneous sensibility and the continued integrity of the foot, without manifesting any lameness. On the other hand the nerve may never regenerate itself, the intervening space being occupied by a band of cicatritial tissue. This is the ideal.

2. *Effect upon the Gait.*—In navicular disease, if the perforans has not contracted adhesions, and the other parts of the foot are normal, digital or low, neurectomy has little or no influence upon the gait. If the lesions are chronic, the gait stilty, the animal frequently stumbles and the tendons and ligaments have become rigid and contracted, the movements will not be as free as in the normal foot. Trotting and running races have numerous neurectomized contestants which win races in fast time. Even in saddle horses, the operation in many instances has been most successful. The high operation does sometimes interfere with the speed, although the running turf has innumerable instances of such horses that are bread-winners. In fact, one would be surprised at the number of race horses that have been nerved.

3. *Growth of the Hoof.*—After section of the nerve, the horn is secreted more rapidly. The foot is apt to be high-heeled and long-toed; the wall and sole are thicker, sometimes twice the normal thickness. Shoeing should be more frequent. After the low operation the foot often approaches the normal in shape and the heels spread.

4. Accidents from pricking, street-nails may be more frequent, but this is very insignificant. I have seen cases in which the quarter and portion of the sole were separated by suppuration from picking up a nail and had to be removed, but a good recovery followed. Such was a fact in case No. 10 of my operations.

5. *Degeneration of the Structures of the Foot and Separation of the Hoof.*—It was my intention to speak in detail of the phy-

siological phenomena of the degeneration of the foot; but I could not obtain all the necessary data in time, and will reserve this subject for an article to be published in the near future. Brown, Sequard, and Chauveau have severed the sciatic nerves of rabbits without any retrograde phenomena in the leg. The first in the tissues is a vaso-motor paralysis which is only temporary and disappears in the course of three or four days. The pathological changes in the foot, according to my observation, seem to be of an inflammatory nature—a suppuration inflammation. The causes of this condition may be two-fold; the trophic influence of the nerves and traumatisms. The former is the predisposing cause, but at times may be the direct or exciting cause; the latter is the exciting cause. By traumatisms I do not only mean accidental injuries, but those which result from the ordinary function of the foot. Injuries to the skin of the nerved foot heal with difficulty. I have seen the foot suppurate in consequence of a blister applied to the coronet. Beyond this, I shall not discuss the question here.

Neuroma.—These are true and false. The latter is a neurofiboma and seldom cause lameness. The treatment is excision.

STATISTICAL CLASSIFICATION OF CASES.

HIGH NEURECTOMY.

1. Geld.	Navic. (sing.)	Operation, 1880.	1885 sound.	5 years.
2. Mare.	" "	" 1890.	"	1 year.
"	Lame both feet.	2d operation, 1891.	Sound when seen last.	6 months.
3. Geld.	Ringbone (post.)	Operation, 1887.	Permanently sound.	5 years.
4. "	" (ant.)	" 1890.	" "	1 year.
			Died from tetanus.	
5. "	" (post.)	" 1890.	Permanently sound when seen last.	1 year.
6. "	Navic. (double)	" 1882.	Sound when seen last.	2 months.
			Tendons broke down.	
7. "	" "	" 1883.	Partially sound.	2 months.
			Neuromas, broke down.	
8. "	Acute laminitis.	" Jan., 1886.	Bad.	Foot sloughed
		Both arteries cut.		Unsuccessful.
9. "	Ringbone (hind)	Operation, Nov., '88.		
10. Grey pony	Navic. (sing.)	" Aug., 1891.	Still sound.	
			Two years ago had suppuration of quarter and sole.	4 years.
11. Geld.	" "	" Apr., 1891.	Sound.	1 year.
				Foot sloughed
12. "	" "	" June, 1892.	Still sound.	2 years.
13. "	" "	" Oct., 1892.	Did well for	6 months.
			Lame from neuroma. Removed.	not doing well
14. "	" "	" Aug., 1892.	Still sound.	2 years.
15. "	" "	" Feb., 1889.	Still working.	5½ years.

HIGH NEURECTOMY.—*Continued.*

16. Mare.	Navic. very lame	Operation, Feb., '89.	Lost foot in	8 months.
17. Geld.	"	" Apr., 1889.	Did well.	
18.	"	" " "	Did very well. Still working.	5½ years.
19. Mare.	"	" " "	Did well for	2 years.
20. "	"	" May, 1889.	Not lame; still driven.	5½ years.
21. Geld.	"	" " 1889.	Did well until owner died. Sold as sound.	
22. Mare. Forseman	"	" Nov., 1889.	Still in use.	5 years.
23. Geld.	" (double)	" Dec. 1889.	Did extra well.	5 years.
24. "	"	" Jan., 1890.	Good worker for	2 years.
25. " Forseman	"	" Feb., 1890.	Sound.	1½ years.
26. Geld.	" (double)	" Apr., 1890.	Then lame. Did well.	
27. "	" "	" May, 1890.	Worked in city for two years, and still on farm.	2 years.
28. "	"	" " "	Won two races, and sold one year later.	1 year.
29. "	Throughbred. Navic. (double)	" Aug., 1890.	Very well for two years when sold.	2 years.
30. "	" "	" Sept., 1890.	Driven for two years, then sold.	2 years.
31. "	"	" Feb., 1891.	Still at work.	3½ years.
32. "	"	" " "	Sold for large price 1 year after.	1 year.
33. "	"	" Apr., 1891.	Worked one year. Killed by accident.	1 year.
				1 year.
34. Mare.	" "	" " "	Broke down in one year.	Broke down.
35. Geld.	" "	" May, 1891.	Still working.	3 years.
36. "	"	" " "	Mar. '94 died of spinal meningitis.	3 years.
37. "	"	" June, 1891.	Did well; sold.	
38. "	"	" July, 1891.	Did well.	
39. Mule.	"	" " "	Still working.	3 years.
40. Geld.	"	" May, 1889.	Good; at work.	5 years.
41. "	"	" " "	Did well.	
42. Mare.	"	" " "	" "	4 years.
43. "	"	" June, 1889.	Still in use.	5 years.
44. Geld.	"	" Aug., 1889.	Did well for	2 years.
45. "	"	" Oct., 1889.	Well one year, then sold.	1 year.
46. Mare.	"	" Aug., 1887.	Serviceable.	2 years.
		" Mar., 1888.	Removed neuromas.	Breaking down.
		" " 1889.	Destroyed.	
47. Geld. Hart	"	" Aug., 1887.	Diagnosis (?)	
48. "	" (double)	" June, 1893.	Not lame at present.	1 year.
49. "	Ringbone (hind) Very lame.	" " "	No improvement.	
		" Aug., 1893.	Destroyed.	
50. "	Ringbone (hind)	" May, 1894.	Not lame July 18th.	
51. Mare.	Sidebone (ext.) Very lame.	" " "	Sound.	Sound.
		Ext. nerve.		
52. Geld.	Navic. Very chronic & lame.	Operation, Jan. 1890.	May 23d.	Broke down.
53. "		" Apr., 1889.	In several months foot sloughed.	
54. Mare.	Chronic laminitis	" May, 1889.	Fall '89 not lame.	
55. "	Navic.	" Sept., 1891.	In one month feet sloughed.	
56. "	"	" Feb. 1892.	About nine months, then lame.	9 months.
57. Geld.	"	" Jan., 1891.	Relieved one year, July, '92, little sore.	1 year.
58. "	Ringbone.	" " "	After six months, lame.	6 months.
59. "	Sidebone.	" Feb., 1891.	No relief.	
60. "	Ringbone.	" " "	" "	
61. "	Navic.	" " "	Sept., '92, sound.	1½ years.
62. "	"	" Nov., 1890.	At present sound.	4 years.
63. "	"	" Dec., 1890.	Relieved about (lame)	1½ years.
64. "	Ringbone.	" July, 1892.	At present sound.	2 years.
65. "	"	" " "	Three months, then lame.	3 months.
66. "	"	" Sept., 1892.	Jan., '94, slghtly lame.	1¼ years.
67. Mare.	Navic.	" June, 1889.	Apr., '90, good.	1 year.
68. "	" (double)	" Jan., 1888.	Jan., '90, good.	2 years.
69.	" 3 years.	" July, 1892.	Still sound (June)	2 years.
70. Geld.	"	" 1881.		6 months.
71. "	" (recent)	" 1882.	Lost foot in fourteen days.	
72. "	" (chronic)	" "	Relieved.	2 years.
73. "	" (acute)	" 1890.	Lost foot.	
74. Mare.	"	" 1892.	Not lame.	

HIGH NEURECTOMY.—*Continued.*

		Operation, 1892.	Recovered from threatened separation of foot.	2 years.
75. "	Ringbone.	" " "	Sound for	1 year.
			Destroyed for street nail.	
76. "	Navic. (chronic)	" " 1891.	Lost foot in	3 months.
77. "	" "	" " 1890.	" "	
78. Geld.	"	" " 1892.	Artery was cut. Lost foot.	
79. "	"	" Feb. '91, low	Slightly relieved.	
"	"	" Mar.'91, high	Not lame, July. Degeneration of tendons.	Destroyed.
80. Mare.	Ringbone.	" Aug., 1891.	Not lame. Degeneration in foot in	3 months.
81. Geld.	Navic.	" " '91, low.	Little improvement.	
		" Sep., '91, high	No lameness. Perforans & perforatus ruptured in	4 months.
82. Mule.	"	" Feb., 1892.	Degeneration of foot in	30 days.
83. Geld.	"	" Mar., '92, low	Slight relief.	
"	"	" Apr., '92. high	Dec. working daily. Not lame.	2 years.
84. Filly.	Congenital (?) ringbone.	" Apr., 1892.	Permanent, April, '94. Exostosis very much reduced.	2½ years.
85. Mule.	Ringbone.	" May, 1892.	Permanent. Working daily. Exostosis smaller.	2 years.
86. Geld.	Navic.	Oper., July, '93, low	Little improvement.	
		" Aug. '93, high	Permanent.	1 year.
87. Mule.	Exostosis on ext. side & phalanx.	" Sept., 1893.	August, '94, sound.	1 year.
		" Ex. & nerve.		
88. Geld.	Ringbone (hind) 2d & 3d phlanx.	" Sept., 1891.	Sound.	3 years.
89. "	Enlargement flexor tendons below fetlock.	" Oct., 1892.	"	2 years.

LOW NEURECTOMY.

1. Geld.	Navic.	Opert'n Sep., 1893.	Not lame.	1 year.
2. "	"	" Feb., 1886.	Not lame when last seen.	1½ years.
3. "	"	" Jan., 1891.	Not satisfactory. Sold 6 months after.	
4. Mare.	"	" " 1888.	Improved; became sore.	
		" Feb., 1889.	Reoperated. Sold.	
5. "	"	" " "	Did well.	
6. "	"	" " "	Improved and serviceable.	
7. Geld.	"	" Jan., 1889.	Not satisfactory.	
8. "	"	" July, 1889.	Did well when last seen.	1 year.
9. "	"	" Oct., 1889.	Not satisfactory.	
10. "	"	" July, 1889.	Passed as sound by veterinarian after.	1 year.
11. "	"	" Nov., 1889.	No history.	
12. "	"	" Oct., 1888.	Sound in '92.	4 years.
13. Mare.	"	" 1889.	Sound at present.	5 years.
14. Geld.	"	" Apr., 1890.	Unsatisfactory.	
15. "	" (double)	" Oct., 1890.	Destroyed for blindness.	2 years.
16. "	" "	" " 1892.	Sold as sound in six months.	
17. Mare	"	" Dec., 1888.	Lame afterwards.	
18. Geld.	"	" Apr., 1889.	Driving well.	5 years.
19. "	"	" Feb., 1890.	Still working.	4 years.
20. "	"	" " "	Sound for one year. Nerves reunited.	1 year.
21. "	"	" Apr., 1893.	Sound for one year. Nerves reunited.	1 year.
22. Mare.	"	" Feb., 1889.	Eight months after, lame.	8 months.
23. "	"	" Mar., 1890.	Five " " "	5 months.
24. "	"	" Apr., 1890.	Sound at present. Trotted in 2.40.	4 years.
25. Geld.	"	" Sept., 1891.	Sound.	8 years.
26. Mare.	"	" Mar., 1892.	Still sound.	2 years.
27. Stallion.	"	" Apr., 1893.	Several months.	
28. Geld.	"	" June, 1893.	Not lame till fall.	
29. "	"	" " "	In five months lame.	5 months.
30. "	" (double)	" July, 1893	Pacer speed. Not lame at present. Died in July.	1 year.

LOW NEURECTOMY.—*Continued.*

31.	Geld.	Navic.	Operat'n, July. '93.	Not lame at present.	1 year.
32.	"	"	" " "	" " "	1 year.
33.	"	"	" Nov., 1893.	Sound at present.	1 year.
34.	"	"	" " "	" " "	1 year.
35.	"	" (double)	" " "	" " "	1 year.
36.	"	"	" Jan., 1891.	Serviceable.	3 years.
37.	"	"	" " 1893.	Relieved one year. Some return of lameness.	1 year.
38.	"	"	" " "	Degeneration in 48 hours. Opposite foot sloughing from high up.	
39.	"	" (double)	" " 1892.	Apparently sound.	2 years.
40.	Mare.	"	" June, 1890.	Permanent. Foot better form.	4 years.
41.	"	" (Saddle mare)	" " "	Permanent.	4 years.
42.	"	"	" July. 1890.	Never entirely relieved. Serviceable.	4 years.
43.	Mare.	"	" " "	Much improved.	
44.	"	"	" " "	" "	
45.	Geld.	Side bones.	" Nov., 1890.	Slightly improved.	
46.	Mare.	Navic.	" " "	Much improved.	
47.	Geld.	"	" " "	Died in April, '92.	1½ years.
48.	"	"	" Dec., 1890.	Permanently. Sold not lame.	3 years.
49.	"	"	" Jan. 1891.	Serviceable.	3½ years.
50.	Mare.	"	" " "	Slightly improved.	
51.	"	"	" Feb., 1891.	Last May slight lameness.	3 years.
52.	Geld.	"	" Mar., 1891.	Slightly improved.	
53.	"	Fract. navic. bone.	" " "	Much relieved. Very slightly lame.	
54.	"	Navic.	" Apr., 1891.	Permanent (January, '94). Not lame.	3 years.
55.		"	" " "	Not lame. Sold December, '93.	2½ years.
56.		"	" " "	Lame after sixty days.	
57.	Geld.	"	" May, 1892.	Doing well.	2 years.
58.	Mare.	"	" " "	" "	2 years.
59.	Mule.	Ringbone.	" " "	" "	2 years.
60.	Geld.	Navic.	" June, 1892.	Much improved, but slightly lame.	
61.	"	"	" " "	Much improved.	
62.	Mare.	Chronic laminitis	" July, 1892.	" "	
63.	Geld.	Ringbone (low)	" " "	Little improved.	
64.	Mare.	Navic.	" " "	Sound.	2 years.
65.	Geld.	Punctured sole.	" Aug., 1892.	"	2 years.
66.	Mare.	Navic.	" Sept., 1892.	Serviceable	2 yeaas.
67.	"	"	" " "	Little lame.	2 years.
68.	Geld.	"	" Oct., 1892.	No relief. Destroyed.	
69.	"	"	" " "	Slightly improved.	
70.	"	"	" Nov., 1892.	Much improved.	
71.	Mare.	Ringbone.	" Dec., 1892.	Slightly lame.	
72.	Geld.	Fract. 2d phal.	" " "	Working daily.	
73.	Mare.	Navic.	" Jan., 1893.	Very little lame.	
74.	Geld.	"	" " "	Greatly improved.	
75.	Mare.	"	" Feb., 1893.	Killed.	
76.	Geld.	Sidebones.	" " "	Very little improvement.	
77.	Mule.	Low ringbone.		Little lame. Working.	
78.	Geld.	Navic.	" Mar., 1893.	Greatly improved.	
79.	Mare.	"	" " "	" "	
80.	Stallion.	"	" Apr., 1893.	" "	
81.	Geld.	"	" May, 1893.	Slightly relieved.	
82.	Mare.	"	" " "	Greatly improved.	
83.	"	"	" June, 1893.	Failure. Killed.	
84.	Geld.	"	" " "	Sold. Improved.	
85.	Mare.	"	" July, 1893.	Greatly improved.	
86.	Geld.	Ringbone (low)	" Aug., 1892.	Not lame. Ringbone smaller.	
87.	Mare.	Navic.	" May, 1891.	Not lame.	3 years.
88.	Mule.	"	" June, 1891.	" "	3 years.
89.	Geld.	"	" " "	Little relieved. Became quite lame.	
90.	"	"	" " "	Not lame.	3 years.
91.	"	"	" Aug., 1891.	Slightly lame.	
92.	Mare.	"	" Sept., 1891.	Slightly improved.	
93.	"	"	" Oct., 1891.	Serviceable.	3 years.
94.	Geld.	"	" " "	"	3 years.
95.	Mule.	Sidebones.	" " "	Relieved December, '94. Slightly lame.	2 years.

LOW NEURECTOMY.—*Continued.*

96. Mare.	Navic.	Operat'n, Feb., '92.	Permanent. Not lame.	2½ years.
97. "	Low ringbone.	" " "	August, '94, very slightly lame.	
98. Mule.	Navic.	" " "	Serviceable.	2½ years.
			Permanent. Not lame.	2½ years.
99. Geld.	"	" Mar., 1892.	Unsuccessful.	
100. Mare.	"	" Apr., 1892.	Slightly lame, but serviceable.	2 years.
101. Geld.	"	" " "	Slightly lame.	
102. Mare.	"	" " "	Still lame.	
103. "	"	" " "	Sound six months when sold.	
104. Geld.	"	" Mar., 1893.	Sound eight months.	8 months.
105. "	"	" Nov., 1893.	Permanently sound.	1 year.
106. "	" (double)	" Aug., 1893.	" "	2 years.
107. "	" "	" May, 1892.	Not Quite sound.	2 years.
108. Mare.	"	" " "	Perfectly sound.	2 years.
109. Geld.	"	" Aug., 2892.	Serviceable.	2 years.
110. "	"	" June, 1893.	No improvement.	
111. "	"	" July, 1893.	Sound ten months. Trotted many races.	10 months.
112. "	"	" Oct., 1893.	Sound.	1 year.

For the collection of the statistics which form the basis of this paper, I am in a great measure indebted to some of my professional friends, among whom I take pleasure to mention Drs. Budd, Eves, Felton, Harker, Hart, Hinebauch, Michener, Muir, McKillip, Ridge, Rodgers, Schreiber, Sellers, Sensemen, Charles Williams, and W. L. Williams, most of whom share my opinion in this operation. I have requested these gentlemen to select their cases, good, bad, or indifferent, irrespective of the results, and have endeavored to collect them in such a manner as one would meet them in a general practice. The tables contain 231 cases, and indicate the disease, the time of operation, the result, and the termination when such is known. All cases date prior to January 1, 1894. Let me say these do not represent the whole of the favorable results, because many are recent, the animals are still sound or serviceable and may remain so for some years. Thus a case which in the table is of one year or two year's duration, and still sound may, if followed, be found to remain so for two or three years longer. This must be taken into consideration in formulating conclusions*.

Of the 231 operations, 128 are digital (low), and 103 plantar (high). In 226 of them, the age of animals was as follows:

* The author does not consider the word *sound* in its technical sense.

1	3 years.	33	9 years.	14	15 years.
1	4 "	30	10 "	5	16 "
5	5 "	5	11 "	1	17 "
16	6 "	23	12 "	7	18 "
20	7 "	3	13 "	1	19 "
37	8 "	6	14 "	3	20 "

Aged 15.

Distribution of the sexes :

Gelding	164
Mare	50
Stallion	2
Mule	12
Pony	1
.....	1
Total	231

Diseases requiring operation :

Navicular arthritis	One foot	163
	Both feet	31
Ringbone		25
Sidebone		5
Fractured navicular bone		1
" second phalanx		1
Punctured sole		1
Enlarged flexor tendons		1
Laminitis (acute)		1
" (chronic)		2
Total		231

Period of soundness or service, and termination of the 89 high operations. Most of them, even some of the oldest, are so at the present time :

Navicular arthritis, 68 cases :

1	10 years.	1	9 months.
1	7 "	1	8 "
3	5½ "	2	6 "
5	5 "	1	4 "
3	4 "	1	3 "
1	3½ "	2	2 "
3	3 "		
14	2 "		
4	1½ "		
13	1 "		

Ringbone :

1	5 years.
1	3 "
1	2½ "
2	2 "
3	1 " 1 then little lame.
1	6 months. " " "
1	3 " " " "
2	2 No improvement.

Sidebone.

1	Sound.
1	No relief.
Enlarged flexor tendons (below fetlock).	
1	2 years.
7	Did well.
Relieved 1	2 years.
Acute laminitis, 1	Suppuration.
Chronic laminitis at 4 months	Sound.

Return of lameness :

1	2 years.
2	1½ "
2	1 "
1	9 months.
1	6 "
1	3 "

These two cases, reported by Dr. Oyler, of Harrisburg, are not mentioned in the table.

Neuromas :

2	2 years.
1	6 months.

Degeneration of foot :

Breaking down of Tendons.		Suppuration of Foot.	
1	2 years.	1	1 year.
1	1 "	1	8 months.
1	5 months.	2	3 "
2	4 "	1	1 "
2 (Ringbone)	2 "	2	1 "
—		2	
7		1	14 days.
		1	Immediately.
		1	" acute laminitis.
		12	Total 19.

In the majority of cases the degeneration of the foot took place within the first year, and earlier than that of the tendons.

Sixty-eight Cases of Neurectomy (Plantar) :

48 Sound or serviceable from 1 to 10 years.
4 did well.
13 degeneration of foot.
2 return of lameness. { 1. 9 months. 1. 6 months (neuroma).
1 failure.
—
68

Of these 68 cases, 70 % were sound or serviceable for at least from one to ten years. The minimum is one year, but as many of them are still in this condition, the average time will be still greater than is indicated by this table.

In 20 % the foot degenerated; in 3 % the lameness returned from reunion of the nerves or neuroma.

Low (digital) operation. Navicular arthritis, 98 cases :

2	5	years.
5	4	"
9	3	"
2	2½	"
8	2	"
3	1½	"
15	1	"
	—44	
1	10	months.
1	8	"
2	6	"
2	5	"
1	4	"
2	3	"
1	1	"
	—10	

Serviceable (not included in the above).

2	No date.	
1	4	years.
1	3½	"
2	3	"
4	2	"
	—10	

Much improved	15.
Slightly	6.
Unsatisfactory	12.
Degeneration (48 hours)	1
Total	98

Return of lameness :

1 year	3
8 months	1
5 "	2
3 "	2
4 "	1
2 "	1
10 "	1
Total	12

The lameness returned within the first year.

In ringbone and sidebones (see table), digital (low) section does not usually effect a cure. The patient generally is relieved or improved, but some lameness or stiffness often remains.

Of a total 98 animals thus operated on, 55 % were sound or serviceable for a period, and even longer if we knew the termination given in the above table, 1 to 5 years. 15 % were much improved, making 70 % of the cases in which, if not practical soundness of locomotion, at least a decided improvement was obtained. I know of many such cases which have been passed by veterinarians as sound ; 12 % were unsatisfactory, and 1 % degeneration of foot.

I have operated on perhaps several hundred horses during the last seven years ; but, as many were hospital, and again, as in other cases, records were imperfect, so that the animal's subsequent history is not thoroughly known to date, I know of only 30 cases of my own of which I have personal knowledge to-day. They are classified below :

HIGH OPERATION.

1. Geld.	Navic.	Operat'n, Apr., 91.	Inside neuroma in two months. Then sound.	3½ years.
2. "	"	" July, 1892,	Sound. Fast road horse.	2 years.
3. "	" (double)	" Jan., 1891.	Sound.	3½ years.
4. "	" "	" Oct., 1893.	Eight months. Then lame and feet degenerating.	
5. "	" "	Jan., 1891.	Not relieved. Near hoof suppurated in one month.	
6. "	" "	" May, 1890.	Sound for two years, then slightly sore, but serviceable.	4 years.
7. "	Ringbone (low)	" June, 1893.	Doing well, but has lost some speed.	1 year.
8. "	Navic.	" " "	Did well for one year. Was foundered and lost foot.	1 year.
9. "	" (Thoroughbred) double.	" Oct., 1892.	Won many races for one year. Lost sight of neuroma.	1 year.
10. Mare.	Navic. double.	" May, 1890.	Serviceably sound.	4 years.
11. Thoroughbred stall.	" "		Won races for one year. Lost sight of.	1 year.
12. Mule.	" "	" Dec., 1892.	Sold October, '93. Sound.	1 year.
13. "	" "	" " "	Foot sloughed, October, '93.	
14. Geld.	" "		Foot sloughed in five weeks.	

LOW OPERATION.

1. Mare.	Navic.	Operat'n, Jan., '89.	Sound to April, '92.	3 years.
"	"	" Oct., 1893.	Lame. Nerve high. Sound '94.	5 years.
	double.		Degenerat'n of tendons May,'94.	
2. Geld.	"	Op. Mar. '91, double	Doing well. December, '93.	2½ years.
3. "	" double.	Operation, July.	Relieved two months. Neuromas. Very lame. Destroyed following March. Tendons contracted and adherent to navicular bone.	2 months.
4. "	"	" "	About two months. Neuroma. Little lame.	2 months'
5. "	"	" July, 1891.	Sound. Removed neuromas two years afterward.	3 years.
6. "	" double.	" Jan., 1892.	Doing well.	2½ years.
7. Mare.	" "	" May, 1893.		
Geld.		" Nov., 1893.	Reoperated.	
"		" June, 1894.	Doing well and speedy.	2 years.
8. Geld.	" "	" Aug., 1893.	Doing well.	1 year.
9. "	"	" Feb., 1890.	Sound. Died from injury.	3 years.
10. Mare.	"	" May, 1893.	Serviceable. Slightly sore.	1 year.
11. Geld.	"	" June, 1891.	Sound.	3 years.
12. "	"	" July, 1891.	Sound. Very speedy.	3 years.
13. "	"	" Sept., 1892.	Sound.	2 years.
14. "	"	" Mar., 1893.	In one month lame from neuroma.	1 month.
15. "	"	" Nov., 1891.	Sound for eighteen months. Still serviceable.	1½
16. "	"	" May, 1890.	Sound. Died.	3 years.

Plantar operation :

2	4	years.
2	3½	"
1	2	"
1	1	"
4 (not traced)	1	"
4 degeneration of foot within	1	"

In 71 % the operation may be said to have been successful. Two developed neuroma. No. 8 lost the foot, the result of laminitis one year after the operation ; degeneration of foot in 29 %.

Digital operation :

6 (at present)	3	years (two died).
2 "	2½	"
2 "	2	"
1 "	1½	"
2 "	1	"
3 (neuroma)	2	months.

81 % of these operations were satisfactory.

From the above records, what conclusions can be drawn ? Do they warrant us to recommend the operation to our client or shall we tell him, in the ordinary paraphrase, " sell your horse ?" The reply, in my opinion, should be the affirmative, always, however, keeping in mind the indications and contra-indications. My results have perhaps been a little more satisfactory than those of most others, due probably to the manner of selecting the cases. The surgeon practices very few operations of which 60 to 80 are satisfactory to him and to his client, and especially, with so little expense and time required until the animal is able to resume his work, and considering that without it the animal is generally worthless. Make allowance here for incorrect diagnosis and unskillfulness in operating, and the prognosis will be still more favorable.

In choosing between the plantar and the digital operations, one must be guided entirely by the existing conditions, that is, the distribution of the nerves filaments to the diseased parts. The former removes the lameness more effectually, which is not so liable to recur ; but the possibility of interference with the gait and degeneration of the foot are greater. In the latter, I see absolutely no danger, excepting a more frequent recurrence of the lameness and at times incomplete removal of the pain. Whenever the local conditions warrant it, I recommend the low operation in preference to the high.

The after treatment simple. Suffice it to say that the bandages should be removed only every three or four days and the feet placed daily into a foot-bath containing corrosive sublimate or creoline. In this way I have often obtained union by first intention. The patient should be at rest for the first ten days and then have gentle exercise until the end of the third week in order to regain the normal use of the foot and to allow the blood-vessels to reassume their normal condition.

THE INFLUENCE OF CLIMATE AND OTHER ENVIRONMENTS ON THE DISTRIBUTION AND CHARACTER OF DISEASE.

By Prof. W. L. Williams, V.S., Montana.

A paper read before the United States Veterinary Medical Association.

The influence of climate, housing, food, care, and other surroundings, induce marked changes upon the distribution and character of disease, whether among animals or mankind; and the student of pathology needs to weigh these forces carefully; that he may avoid error by arriving at conclusions based upon observations confined to a limited area.

Both in those diseases known to be transmissable, and in those supposed not to be capable of passing from one animal to another, we find in many instances that the disease is narrowly confined to a limited area and never seen outside of it. Others are usually confined to comparatively limited areas, passing rarely and spasmodically beyond their usual boundaries, soon to retreat therein again, others exist mainly in certain centers with isolated cases disseminated over a large portion of, or the entire animal world, while others know no boundary, apparently, except that of animal life; all presenting interesting variations in character, the reasons for some of which we can know or estimate.

The study of the various influences controlling the distribution and character of diseases belongs largely to the domain of philosophical medicine, and offers for consideration many highly interesting and instructive problems, but it is no less a part of

practical medicine giving new insight into many of those peculiar epizootics, as well as to a large number of extraordinary cases of common affections, which at times so baffle and worry the practitioner. The extraordinary case in one locality, under one class of conditions, frequently constitutes the ordinary disease under wholly different surroundings.

The study enlightens us to as to the etiology of many diseases since we not infrequently find the prevalence of a disease in a certain locality attributed to certain well marked local environment; when, in fact, the same disease and of like character exists in regions where the supposed essential etiological factor of the former locality is wholly absent. So it is that we find our writers attributing a disease at times to some local cause, when a more general knowledge of the distribution of the disease would show them that it existed under conditions requiring some other explanation for its prevalence than that given.

Again, we find our writers describing symptoms of a disease as those characteristic of a malady, when in reality they are overlooking the essential characters and are portraying vividly what they have seen in a limited area, perhaps in the compass of a few square miles in a great city.

These omissions and errors find their way naturally into the class rooms of our veterinary colleges, and result in sending forth licentiates poorly equipped for such work as will fall to the lot of many in their chosen locations.

Neither the time nor the data at hand will permit an exhaustive consideration of the subject before us, and the sole justification for presenting it is the hope of awakening an interest in this very important and instructive study.

It was not deemed desirable to undertake the consideration of a great number of diseases, but rather of a few important affections which are more or less prevalent in the United States, which it is believed will serve as a ground work for an interesting discussion.

In order to secure as complete date as possible in the brief time at my disposal, letters were addressed to about one hun-

dred of the leading veterinarians of this country, almost all to members of this association, and representing, as nearly as possible, all sections of the United States, asking for their observations as to the influence of climate and other environments upon the distribution, character, course, and termination of the following diseases, viz.: Glanders, tuberculosis, actinomycosis, bursattee, enzootic spasm of the larynx, poll-evil and fistulous withers, osteo-porosis, rachitis, periodic, or specific opthalmia.

The responses to these letters were unexpectedly numerous and were very gratifying in the amount of interest manifested, and the amount of valuable data contributed, and I wish to acknowledge here, with sincere gratitude, what I have not been able to do individually, my obligations to my colleagues for their kind assistance in the preparation of this paper.

It will be noted that some of the diseases very markedly limited by geographical lines have not been considered in our list, although their behaviour offers some very interesting points for study.

We are all very well aware of the closely defined area in which Texas fever is confined as an indigenous disease, its boundary being fixed fundamentally, to all appearance, by thermal conditions. The so-called loco disease of the dry regions of the West, seems to be co-existant with the prevalence of the loco weeds—the oxytropis lamberti, and closely allied plants, although up to the present the relationship between the plant and the disease has not been defined.

Other diseases of a local character such as "mountain fever" and "poke easy," or "kidney disease," prevalent in certain Rocky Mountain regions which have been but indifferently or not at all described, depend apparently upon local conditions, the nature of which are at present not even surmised.

Other diseases depend for their distribution and character upon the density of animal kind, like hog cholera and bovine pleuro-pneumonia, and tend to pass over infected countries in rythmic waves, the lowest point of prevalence and mortality following closely the decrease in numbers of animals, and the

acquired immunity to a severe pestilence, to be again followed when the general conditions of the country are favorable to dissemination ; animal numbers have increased, and the disease in some focus has found favorable conditions for luxurious development, when the disease again spreads over a large area as a great epizootic.

The distribution and character of other diseases are largely determined by the prevailing use to which animals are put, thus infectious abortion of cows predominates in dairying regions and far less frequently in localities devoted to the breeding of beef cattle. Again other diseases may exist without prejudice to the native animal in a country where it is indigenous, and become a virulent pestilence once it oversteps its indigenous territory ; or susceptible animals are imported into its territory, like Texas fever and rinderpest.

Coming to the brief list of diseases we have selected to specially consider, first, in order of arrangement, is glanders, one of the longest known, most carefully studied and most widely disseminated diseases of animals ; running an indeffinite, erratic course, assuming multidinous forms, and offering on the whole, one of the most interesting subjects from the standpoint now viewed. Glanders among solipeds is more or less prevalent in every country so far as known save Australia, irrespective of temperature, humidity, altitude, or other climatic conditions. It attacks its victim in spite of food, housing, care, age, or breed, yet its prevalence, transmissability, character, and duration, are all as susceptible to the influence of such, as is the most delicate barometer to changes in atmospheric pressure, and becomes so changed in aspect that there is no resemblance in any way save bacteriologically between a series of cases.

Fleming (*) notes that the disease is highly prevalent in Continental Europe and northern and eastern China, rare in South Africa, unknown in India, except as an imported affection, and coming, as a rule, from Australia, where the existence of the disease is denied ! He also quotes Liguistin, as stating that the disease was unknown in Mexico until introduced by the

United States troops during the war with that country in 1847, but that it failed to spread to any notable extent.

Prof. W. Williams (†) states that glanders is a disease of temperate climates, diminishing in prevalence in hot or in cold countries.

Robertson (‡) agrees substantially with Williams, adding two exceptions to the general rarity of Glanders outside temperate climates by noting its prevalence in Norway and Java.

Freidberger and Fröhner (§) citing Krabbe, state that by statistics collected in 1857–1873, that for each 100,000 horses that were annually found glandered in Norway, 6; in Denmark, 8.5; in Great Britain, 14; in Sweden, 57; in Wurtemburg, 77; in Prussia, 78; in Servia, 95; in Belgium, 138; in France, 1130; and in Algiers, 1548.

In the State of Illinois from 1886–1892 inclusive, there were reported annually 13 glandered horses for each 100,000. Other figures of value in the United States were not available, and the prevalence of the disease can only be considered comparatively.

In the New England States, which are cool and not moist, the disease seems to be rare and to pursue a mild, chronic course generally. In Maine, according to the cattle commissioner's report, there were destroyed in 1891, 18 glandered animals, and in 1890 the same number. They claim, however, that a large percentage of the cases were traceable directly to importation from Boston, Mass.

Dr. Choate, Lewiston, Me., reports glanders of a mild chronic type fairly common in his vicinity. Dr. Peters, Boston, Mass., reports the disease rare. While Dr. Paige, Amherst, Mass., reports it rare except in large cities.

Judging from the report of the Massachusetts Cattle Commissioners for 1887, glanders in a very mild, chronic form was quite prevalent among the street-car horses of Boston.

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* *Veterinary Sanitary Science and Police.*

† *Principles and Practice of Veterinary Medicine.*

‡ *Equine Medical.*

§ *Special Pathology and Therapeutics.*

In a special report by Dr. Winchester, it seems that 192 animals out of 1700 were quarantined as diseased or suspicious, out of which but four animals were killed, although Dr. Liautard had positively pronounced 31 glandered and 28 suspicious. Of the 192 animals quarantined, 20 were released by Dr. Winchester's protest, although this latter number included nearly all those positively condemned by Drs. Liautard and Huidekoper. It seems that acute, well defined cases, were almost unknown in this outbreak, and that the quarantining of the affected and suspected animals by Dr. Winchester, served evidently as Dr. Huidekoper notes in his report of inspection, to ameliorate the symptoms under the beneficent influence of rest, good food and improved hygenic conditions. There was a strong tendency, it seems, in these cases to spontaneous recovery, and it is well to note here that close quarantine, *i. e.*, the withdrawal from labor, with good food and care, always tends in all localities, to remission in symptoms and a tendency to recover, either apparent or real, almost always the former, thus tending to bring the official veterinarian into disrepute, and by bringing about many apparent recoveries tends strongly to domicile and perpetuate the malady.

In New York and Brooklyn, according to Dr. Berns, Brooklyn, the disease is comparatively rare at present, doubtless due more to the influence of well enforced sanitary police regulations than to climatic influences, the latter being quite favorable to the spread of glanders in a virulent form.

In Pennsylvania, Dr. Pearson, Philadelphia, reports the disease on the increase, but leaves us in the dark as to type assumed; it is reported comparatively rare in Ohio by Dr. Howe, Dayton, and its prevalence at a ration of 13 in 100,000 horses in Illinois has already been noted.

Climatically, New York, Pennsylvania, Ohio, Indiana, and Illinois, may be grouped together as comparatively humid states, with sudden and great thermal variations, but generally, neither excessively hot nor cold. The climate does not call for very warm stables, rendering the question of overcrowding and bad

ventilation a minor one, and being in a highly productive and prosperous agricultural region most horses are well fed and receive careful handling. The unfavorable climatic conditions are counterbalanced largely by favorable surroundings in other respects. In this series of states we find every possible type of glanders, the chronic prevailing, although the acute is not uncommon, due evidently to overcrowded, unsanitary stables. In country districts, quite notably in central Illinois, many cases exhibit a very mild type with very distinct tendency to spontaneous recovery.

Animals, which from their history have evidently been affected for six or eight years, have at no time been incapacitated in the least for ordinary work but have in every way except occasional cough and slight nasal discharge with slight tumerfaction of sub-maxillary lymphatics and characteristic ulcerations, or cicatrices giving all evidence of robust health. Others have come under our observation, where an entire stable of horses had become affected alike apparently in an acute form, with emaciation and profuse nasal discharge, some of which entirely recovered; others partially recovered, and after two or three years were condemned and killed, while the recovered animals exhibited no signs of disease, although exposed to animals plainly affected. Acute cases, apparently approaching rapidly a fatal termination, frequently turn under favorable conditions and make very marked improvements.

The laws for killing prevent opportunities for very extended observations.

In New York, Dr. Law, Ithaca, observed to me in a private conversation, that the had seen at Ithaca permanent recovery from the disease.

Wisconsin, Michigan, and Minnesota, probably differ but little from the series of states just considered. Dr. J. S. Butler, Minneapolis, noted that in his experience, the disease is more prevalent and more acute in large cities, where horses are crowded in ill-ventilated stables. He also remarks that in his locality the disease apparently remains latent in winter and de-

velops in spring. This observation applies certainly to much of the territory considered, but not so evidently as Dr. Butler had observed since in the more southerly states just considered the entire winter may be and not infrequently is, almost throughout very like the spring of Minnesota. Hence often the winter season is the period for greatest development in these localities, while a dry summer with abundant food may operate favorably.

In Missouri, Kansas, and Arknansas horses, except in cities, are very littled stabled, the climate being milder and no marked tendency to humidity, which condition seem to very markedly affect the type of glanders, the disease being quite thoroughly disseminated, but generally causing no great loss, spreading very slowly and attacking but few animals in a band. Dr. T. J. Turner, State Veterinarian, Columbia, Mo., observes that while widely disseminated the disease is but feebly communicable, and assumes almost constantly the mild type in outdoor animals and the acute type in those closely stabled. Dr. White, Sedalia, Mo., reports the disease almost constantly mild and very feeble transmissable. Dr. Dinwiddie, Fayetteville, Ark., reports glanders in mules as generally running a mild, chronic course, in direct contradiction to the generally accepted ideas of the disease in this animal in almost all parts of the world.

Dr. Mayo, Manhattan, Kans., notes that the nasal discharge in glanders is less in his region, he thinks owing to a dryer atmosphere, than observed in more northerly and eastern states.

Dr. G. A. Johnson, Sioux City, Ia., has observed the disease almost wholly in the chronic form, but notes no recoveries. Dr. W. B. Niles, Ames, Ia., has noted the disease in the mild form, and during dry seasons has noted apparent recoveries, leading him to believe that under favorable conditions spontaneous recovery is quite possible.

In the South Atlantic and eastern Gulf States we meet with a warmer and more humid climate, solipeds generally are of less

value, mules largely predominate, and as a rule they are not so well fed and cared for as in other sections considered.

Dr. Kilbourne, Washington, D. C., has found the disease quite prevalent in the District of Columbia, Maryland, and Virginia, usually in a mild chronic form.

Under rigid sanitary laws the disease has decreased in the District of Columbia from 78 cases in 1889 to one case every month or two. He has noted one case of spontaneous recovery from nasal glanders, two from Farcy, all proven cases of glanders and the recovery from one year after disease seemed in every way complete.

Dr. Cary, Auburn, Ala., comparing glanders in Alabama with his observations in Iowa and Illinois, finds the disease more virulent in the former state, owing to increased humidity with heat.

Dr. W. B. Niles, Ames, Ia., who has observed the disease in South Carolina and Iowa, finds that in mules it runs an acute course, while in horses he notes no difference in South Carolina and Iowa.

Dr. Tait Butler, Agricultural College, Mississippi, reports the disease rare in his state. Prof. A. W. Bitting, Florida, reports that in Florida isolated cases are rare and acute in form. The diseased animals, if not already in their ownership, are soon transferred to negroes.

Along the low, and more humid sections of the Pacific Coast glanders of a virulent type prevails quite extensively.

Aside from some very small areas, we have briefly glanced over the United States, except the Rocky Mountain region, and the high and to a great extent arid plains, sloping from their base towards the Mississippi River, a large part of which is cold, some of it extremely so, all quite dry, even to converting much of it without irrigation into a great desert, the altitude varying from 2,000 to 8,000 feet, and horses kept generally in large bands without stabling. They are usually placed in such environments as permit, with labor, the procuring of a liberal, if not an abundant supply of food.

Dr. A H. Baker, Chicago, Ill., upon a trip to South Dakota in 1885, found glanders very prevalent, and was specially struck with the very mild type it asssumed, horses doing their accustomed labor for seven or eight years without apparent detriment, and showing no constitutional defects whatever, yet by local lesions showing plainly and unmistakably that they were affected with glanders.

Dr. Hinebauch, Fargo, N. D., reports the disease as assuming the same form in his state, and to this mild, largely latent type, rendering detection difficult, he attributes its wide prevalence. Dr. S. Stewart, Kansas City, Kas., observing glanders along the Missouri river, Dakota to Arkansas, finds it in a very mild form and has noted several apparent recoveries, either spontaneous or under indifferent treatment. Dr. Waugh, Alleghany, Pa., observing glanders in California, Arizona, New Mexico, western Texas, and along the northern border of old Mexico, find it prevalent among horses, mules and asses, being most rare in the latter and assuming a very mild type. The acute form is rarely seen. This mildness Dr. Waugh attributes to the hot, dry climate, alkaline water aud grasses richly impregnated with mineral substances. Treatment appeared favorable, yet he failed to produce recovery in cases tried in New Mexico.

In the San Joaquin Valley of California, Glanders has recently prevailed very largely and led Dr. Klench (AMERICAN VETERINARY REVIEW, Vol. XIII, p. 214) to contribute a very remarkable article upon the disease under the name of general lymphangitis, giving as faithful a description of glanders as can well be found in veterinary literature, in history, symptoms, termination, etc., yet holding, on the most palpably erroneous grounds, that the disease was not glanders. In this locality Dr. Waugh has noted spontaneous recovery in horses.

In Montana most horses are ranged on land 3,000 to 7,000 feet above sea level, have usually abundant food and a dry climate. The past year has been exceptionally wet, and as an immediate result, glanders has developed more commonly than before, and in a more severe form. Of forty cases inspected,

three were acute in character, two common work horses, indifferently cared for, and one a draft stallion kept stabled.

I had occasion to inspect some 2,000 range horses for glanders at the annual round-up, and while I found on the range twelve glandered animals, all but two of them had been worked on valley farms where glanders existed, and where they had either contracted or developed the disease. Of the two unbroken range animals found affected, one was a two-year-old gelding, the other an aged brood mare affected for five years. Both were in first-class general health, and showed slight, but evident local lesions. Most of the animals affected for the longer periods were of a very mild type. One recent case I have watched for a few months was severely affected, constitutionally and locally, in January this year, but has rapidly improved and is now apparently well, except small cicatrices in nostril and very slight glandular tumefaction.

The disease in Montana must be said to assume a remarkably mild type, and on the ranges is barely a contagious disease, and although farm animals badly affected are allowed at idle seasons to intermingle freely with range stock, yet the disease is rarely seen among them. Perhaps it is far more common among these range, or practically wild horses, than it would seem, but remains wholly latent, or in a mild internal form, until the animal is caught and subjected to the fatigue of rough breaking, when it develops. It seems highly probable that some range horses acquire the disease in a mild form, recover, and thereafter possess immunity. Post-mortem examinations of glandered horses in Montana show a less severe affection of the lungs, few glanderous tubercles being present.

In England the disease assumes, apparently, a more acute type than in most parts of the United States, and Prof. Williams *(Prin. and Prac. Vet. Med.)* holds that the only practical possibility of recovery is in mild cases of farcy. Fleming *(Vet. San. Science and Police*, Vol. I., page 505) admits the possibility of recovery in mild cases of farcy.

In Continental Europe it would seem it assumes a milder

type than in England. Leading professors, Dickerhoff,* Friedberger and Fröhner† and numerous others admit the possibility of occasional recovery, spontaneously, or by the aid of medication.

War has at all times and in all countries proven a prolific cause of glanders; the fatiguing work, the great exposure, requently in a climate wholly new to the animal, the scanty and damaged food supply, the want of proper care, the intimate, immediate contact of healthy with diseased animals, in close barracks, or at times in still closer transport ships, and the large number of external wounds, galls and abrasions rendering superficial inoculation easy,—all serve to give the disease great virility, and cause it to spread as a serious scourge. This is not all, for, as Dr. Kilbourne observes regarding prevalence, it is traceable in many of the northern and border states directly to the purchase of affected horses from the United States Government at the close of the Civil War. The animals which had acute glanders, and would soon have died and ceased to have been a source of danger, were killed, while the dangerous animals, those with mild chronic glanders, being impaired for military service, were sold in every direction, causing a wide dissemination of the disease.

It has been claimed that breed influences the character and distribution of glanders, but this is probably indirectly. Some say that lymphatic draft horses suffer more severely, but in central Illinois, much devoted to breeding high class, heavy draft stock, the disease appeared far less in them than in other breeds. It appeared to be especially the disease of the poor man's horse. The better classes owned the more valuable draft stock, and if one were ailing the nature of the malady was learned by employing a veterinarian, and proper action taken, or the diseased animal was sold or bartered at a low figure to the poorer neighbor, and the disease, with the aid of unsanitary surroundings, communicated to his inferior animals.

**Lehrbuch Path and Therap.*

†Spc. Path. and Thera.

To-day we find glanders most prevalent in those sections of our country where it runs the mildest course, shows the greatest tendency to recover, and is the least contagious. In such localities at present we find the most and the cheapest horses. The mild cases are difficult of diagnosis, and stock owners cannot be convinced of the character of the disease.

In the Rocky Mountain region the vast herds of wild horses cannot be satisfactorily inspected, and the mallein test in these is out of the question, so that the mildly diseased animals cannot be detected. Owners have been taught to believe that glanders is uniformly and rapidly fatal; hence, take no alarm from a feeble nasal discharge, which disappears at some seasons of the year, the animal continuing in good general health and performing good labor year after year. Many owners are, in their own mind, competent judges of the matter, and relate how much they saw of it during the war, but are not aware that they saw only acute cases and failed to note the mild ones which, taken from the army and sold, scattered the seed, the fruit of which we are still harvesting.

Veterinarians, too, with little experience are slow to call glanders, in many of these localities, by its right name; but, like Dr. Klench in the paper already noted, worry themselves to find some other name by which to hide their error as to its real nature. Our British and American colleges give too vivid a description of the virulence of glanders, and the average graduate locating in the dry regions of the west is illy prepared to condemn a horse for glanders that has been barely visibly affected for seven or eight years, or one that has been ailing for a few months and is rapidly recovering.

To control glanders, we need to appeal to intelligence where it exists, and in its absence to force. When an intelligent horseman has been working a fat, robust, glandered horse for seven or eight years, it does not appeal to his intelligence to say to him that his animal is affected with an unavoidably and rapidly fatal disease.

(To be Continued.)

HOW CAN WE CONTROL THE PREVALENCE OF TUBERCULOSIS AMONG CATTLE?

By M. R. Trumbower, D.V.S.

A paper read at a meeting of the United States Veterinary Medical Association, held in Philadelphia, Pa., September 18–20, 1894.

Gentlemen. — Addressing you as a representative of a great western state, one noted for its dairy and breeding interests, and in which no action has yet been taken concerning the control of this disease, I may appear as an obstructionist rather than an active sanitarian to those of you who have studied this subject longer than I have, and who have been engaged in practical work for its control.

The fatality among cattle from this disease is not so great as to create a general demand for legal measures to protect the breeders and dairymen against losses.

The demand is made as a public health measure.

In whatever I may say to you here to-day, I do not wish to be understood that I am opposed to destroying the tuberculous cattle, wherever they may be found, but I do believe that the danger to human life by eating the meat or drinking the milk from tuberculous cattle is very greatly exaggerated by many of our medical brethren.

In the consideration of this subject we must lay sentiment aside, attractive as it may seem, and study it so that we may arrive at conclusions that are practical and capable of being carried into effect without becoming abortive in our hands.

While I appreciate the need of active aggressive work I feel that we of the western states are far from being ready or able to enforce any specially restrictive measures at the present time. Our people are not educated in this matter. Some of our farm journals are publishing reports of the work done by a few of the eastern states with comments upon it that are very unfavorable, and instead of being an aid are detrimental to correct information.

Our dairymen are suspicious of imposition, and jealous of

their rights ; and, if we attempt at the present time to enforce active measures involving the business of the dairymen in the destruction of a part of their herds, before they become aware of the justice of such proceedings, we will succeed only in making a miserable failure, and endanger all practical efforts for the next generation.

Even most of our physicians and public health officials are not sufficiently well informed to endorse the actions that will be necessary to secure effective results.

In the medical profession this matter of sanitary protection against tuberculosis infection in its infancy ; by many of them the dangers are depicted in a horrifying manner, and by others they are almost entirely ignored.

Until the medical profession obtains some recognition in its endeavor to protect human life, what have we to hope for ? In their efforts human lives are at stake alone, regardless of financial values. In our efforts financial values are predominant in the minds of those directly and primarily affected.

Our dairy interests are very great. The dairy products of Illinois in 1892 amounted to the value of $75,691,765 in 1893, $90,000,000 in round numbers ; before we antagonize this great industry in any way that may seem arbitrary we should count the cost. Invested capital recognizes no sentiment, nor will it tolerate any apparent infringement upon its rights.

While this agitation regarding the prevalence of tuberculosis among cattle is a legitimate and proper one, we should be guarded in our assertions, and confine ourselves to statements of fact. Some there are who dwell upon the great danger resulting to the human family from the consumption of meat and milk—a danger that has been exaggerated out of all proportion—and if continued may result in the closing of all foreign markets against the beef and dairy products of this country, for it will lead foreign nations to believe that all our herds are largely tuberculous. We ought to be just toward ourselves, and avoid magnifying a fact that is sufficiently serious to be worthy of our attention when viewed in the light of truth.

Why lay so much blame upon milk from cows, by the wild presumption that many thousand infants die annually from intestinal tuberculosis, the result of milk infection, when it is acknowledged that at least seven per cent. of the human family is consumptive.

Does it appear right?

How many cases are recorded when cows milk was the known cause of such a fatality? Very few.

Does it not appear to you that we are attempting to make a scape-goat of the useful and almost innocent cow? Again, I say, we are not yet ready in the west to adopt radical measures for the suppression of a disease that does not prevail to any alarming extent among our herds.

I am well satisfied that we in Illinois do not have the percentage of tuberculous animals that you have in Massachusetts, or any other of the eastern states; our cattle are kept under different, better, and more natural conditions; their lives are more active, they are not so closely housed; there is far less exposure to contamination, and above all are not inbred as much as many dairy herds of the older states; the farmer does not keep the same family of cows on his farm for several successive generations, and then distribute them among his children as part of their birthright. The majority of our cows are used only one or two years in the dairy and then they are fattened for beef while yet young and desirable beef cattle; the most of our beef cattle are sold and slaughtered before they have gained maturity, hence we rarely find any evidence of tuberculosis among them.

Therefore I believe that we have a great deal less of this disease than is found in the older states.

If we undertake the eradication of tuberculosis from our breeding and dairy herds we assume an endless task. When we destroy one per cent. or forty per cent. of our dairy cattle they will have to be replaced by an equal number which in turn may be infected with tuberculosis. We will have to destroy or abandon many cattle barns such as cannot be thoroughly disin-

fected. Consumptive attendants may be a source of infection of our herds. The presence of tuberculosis in swine and other domestic animals is a source of danger.

I see only one way by which we of the west can make any progress towards lessening the prevalence of this malady, and that is, to provide by special enactment laws for the inspection of all cattle that are used for supplying milk to cities, towns and villages. This would require inspectors for each district, who should be appointed by some central power, and no one should be allowed to sell milk coming from uncertified cattle. This action necessarily invokes a large appropriation for compensation of inspectors and other clerical aid. So long as any community is opposed to such enactment, its representatives in the legislative body will not vote for it. A rural representative will not misrepresent his constituency in such a measure.

Cities, by ordinances, may require milk inspection, but that does not reach far enough ; dairy inspection they cannot enforce, for most of the dairy herds are owned outside of their jurisdiction.

If the state provides for dairy inspection at public expense, all cities, towns, and villages are equally entitled to the benefits. Then, where will we find a sufficient number of competent, faithful, and honest men to fill this requirement. We do not have a sufficient number of veterinarians in the State of Illinois to do this work if all were engaged in it, nor is there a single state that has, with the exception of a few of the New England States.

I have an impression that we of the west can obtain the best results for the present time by using all our energies in disseminating reliable information, and thereby arouse a public sentiment that will eventually lead to the desired end. Patience, and persistant effort, judiciously administered, will do more good now than more active measures that would be in great danger of being regarded as arbitrary and unjustifiable by our people.

In the meantime, we in the State of Illinois, shall make inspections, as heretofore, of herds that are reported to be tuber-

culous by their owners, and earnestly advise the prohibition of the sale of milk from such herds until the affected animals have been killed.

By the terms of the law under which our State Board of Live Stock Commissioners act, they can only cause to be investigated reported existence of disease, hence a thorough search for diseased animals cannot be inaugurated except in tracing out exposures to any reported case.

Again, the peculiar wording of the law, regarding compensation to owners of diseased animals, is such that no compensation can be made in cases of tuberculosis, since in appraising cattle, the amount of appraisement is based upon the fair cash market value for use for beef or for dairy purposes. Such being the situation the only course left for the board to pursue upon the discovery of this disease, is to place the diseased animals under quarantine until the owner agrees to destroy them.

We dare not advocate radical measures just now, and I do not consider it so urgent and vital a necessity as some of our theorists do.

Now a word in regard to the tuberculin test. Are we justified in condemning as unfit for human food every carcass that has reacted to this test? If so, do we not destroy a great deal of valuable and productive property needlessly?

I do not believe that the milk or flesh is dangerously infected in an animal that has only a small deposit in a mediastinal gland, or an encysted abscess in the liver. But how can we determine this during the lifetime of the animal? We cannot do so, therefore we have to destroy all that react, or else only those which manifest some physical evidence of disease on examination. Would not the latter method be practically sufficient and exceedingly more satisfactory to the owner than the former?

Re-examinations would have to be made oftener, but we would avoid the antagonism and emnity of the owner, which would eventually lead to submission on his part to any measure we might subsequently advocate.

If it is advisable to destroy all cattle that react to the tuber-

culin test, the United States Government will have to take charge of this work in all the states that give their consent to it, and all cattle from other states must be strictly excluded, unless they have undergone the test, and are declared free from disease; this would virtually establish a dead line between states, and would soon become so irksome as to cause organized opposition and greatly delay, if not prove very detrimental to all concerned.

Before leaving this subject I wish to call your attention to a marked element of danger in the diagnosis of tuberculosis post-mortem.

Many of you doubtless know that aged cows which have been badly kept and whose vital powers are on the decline, very frequently have glandular indurations, caseation, and occasionally calcification may be present, without being tubercular in their nature. Again we occasionally find actinomycotic growths in the lungs and other organs which simulate in appearance tuberculosis so closely that it becomes very difficult to distinguish the difference. Possibly there are veterinarians who might inadvertantly swell the percentage of tuberculosis by mistaking such cases for that disease.

I will now leave this subject with you for your consideration, and if I have succeeded in provoking a discussion upon this difficult problem "How to Suppress Tuberculosis," I shall feel myself amply rewarded for presenting the practical part of this question in my own way.

THE DISPOSITION OF ACTINOMYCOTIC CATTLE IN THE UNION STOCK YARDS, CHICAGO, ILL.

By M. R. Trumbower, D.V.S.

A paper read at a meeting of the United States Veterinary Medical Association held in Philadelphia, Pa., September 18–20, 1894.

Since October 15, 1888, the State of Illinois has arrested and quarantined actinomycotic cattle at the Union Stock Yards, Chicago, and at the National Stock Yards at East St. Louis.

This work has been continued with varied success and under many obstacles to the present time. Agents of the State Board of Live Stock Commissioners have been placed in these yards, with instructions and authority to arrest all cattle that were plainly affected with this disease. All such animals were locked up in quarantine pens set aside within the yards for this purpose. On each Saturday the State Veterinarian examined all the cattle that had been quarantined during the week, and condemned as unfit for human food all that were badly diseased, and held for post-mortem examination (at the time of slaughter) all such as were doubtful of being fit to go on the market as healthy beef.

For the year ending October 31, 1889, 831 cattle were quarantined for examination, of which 773 were condemned as unfit for human food, and were tanked by the City Meat Inspector of Chicago.

For the year ending October 31, 1891, 2,259 were arrested of which 2,136 were condemned.

For the year ending October 31, 1892, 2,225 were examined and 1,759 of them condemned.

For the year ending October 31, 1893, 1,153 were examined and 1,006 condemned as unfit for human food.

During the years 1892, '93, and '94, professional "Lumpy-Jaw" buyers became so numerous as to make the work of arresting affected cattle very difficult, for they were favored by many of the Commission firms in their nefarious traffic, who reported to them all such cattle in their consignments and preferred to sell to them in preference to having them inspected by the State officials.

The contracts for the slaughter of these quarantined cattle were awarded by the Lump-jaw Committee of the Chicago Live Stock Exchange to parties at suspiciously high prices. This naturally created a suspicion that in order to realize any profit out of these contracts the meat was being smuggled into market after being dressed, in violation of the city ordinances, although the city meat inspectors had charge of the tanking of all condemned cattle.

It finally became a question as to who should be credited with defrauding the shipper and the consumer of meat, the lump-jaw buyers or the contracting butcher.

After trying in many ways to remember this evil, it eventually became necessary to enforce a radical change in the administration of this work or to wholly abandon it.

On the 3d day of January, 1894, His Excellency, Governor John P. Altgeld, the members of the Board of Live Stock Commissioners, and Dr. Arthur Reynolds, the Health Commissioner of Chicago, met the members of the Live Stock Exchange in their hall at the Union Stock Yards, and informed them that the Board of Live Stock Commissioners would positively withdraw from this work if the members of the Exchange did not lend their aid in reporting all the diseased cattle for examination that were consigned to them.

After many conferences and delays the following rules were adopted by the Live Stock Exchange:

RULE TWENTY-FOUR OF THE CHICAGO LIVE STOCK EXCHANGE.

SECTION 1.—No member or members of the Chicago Live Stock Exchange shall buy, sell, or dispose of, or weigh to any customer or purchaser thereof, or cause to be bought, sold, or disposed of or weighed to any purchaser thereof, any animal apparently affected with actinomycosis, commonly called "Lumpy-Jaw," or having any lump or swelling upon the head or neck, until the said animal has been inspected by the State Veterinarian, and such inspection shall be made prior to the time when such animal is weighed, or if not weighed, then before it is delivered. Only such animals as the said veterinarian shall pronounce to be free from the said disease shall be accepted and paid for by any members who may have purchased the same.

SEC. 2.—Members of this Exchange having possession or control of any animal or animals apparently affected with said disease or having any lump or swelling upon the head or neck, shall call upon the State Veterinarian at his office for inspection of such animal or animals, and if upon such inspection, such animal is found to be free from disease, the member or members having such possession or control, may proceed to deliver said animal in the regular course of business, and the said animal shall be accepted by any member purchasing or who may have purchased the same. If such animal shall not be so passed, or found free from disease, but either shall be condemned by said veterinarian or Assistant State Veterinarian, or shall upon inspection, alive or upon foot, be deemed doubtful by him, such animal shall not be bought, sold, or disposed of by any member of this Exchange, on foot or alive, or shall the carcass of such animal, nor any part thereof, be bought, sold, or disposed of in any way by any member of this Exchange unless, and until there has been a post-mortem examin-

ation thereof by said veterinarian and the said carcass has been by said veterinarian after such examination, deemed and declared to be healthy and fit for food.

SEC. 3.—Any member convicted of a violation of this rule shall be fined $50.00 for each animal so bought, sold, or disposed of before inspection by him or his agents.

SEC. 4.—The Board of Directors are authorized to provide, arrange, and agree that this Exchange shall pay or provide the salary not to exceed $—— per month of such person, to be selected by said Board of Directors, as the State Board of Live Stock Commissioners shall accept, to have charge of all animals affected with said disease, or apparently affected therewith, and of the quarantine thereof, pursuant to the statutes of Illinois, in such case made and provided; provided that such person shall make a report daily of the business of his station, and perform such other duties in the premises as may be from time required of him by said Board of Directors, not inconsistent with the statutes aforesaid.

SEC. 5.—The secretary of this Exchange shall keep a set of books showing the number and disposition of every animal inspected as aforesaid, and shall provide and account for the two sets of metal tags duly numbered and stamped to wit; of square tags stamped "condemned" for condemned cattle, and of round tags stamped "passed" for passed cattle, with a device for fastening same in the ears of all inspected cattle and likewise a number of blank paper receipts bearing the same number of tags, both of which he shall issue as may be required to the duly appointed State Veterinarian.

SEC. 6.—A private telephone system connecting all cattle scale-houses, quarantine pens, and the secretary's office, shall be established by this Exchange.

SEC. 7.—It shall be the duty of one member of the Board of Directors of this Exchange (who shall perform this duty in rotation) to be present at all times when any infected or diseased animal is slaughtered, to report to the secretary the results of such killing and personally to see that all portions of condemned animals except the hides go into the tank and are rendered unfit for food and that all portions of this system are rigidly adhered to.

SEC. 8.—The Board of Direcrors is hereby charged to take all necessary steps to make the provisions of this rule effective and the directors may appoint a committee of three members of the Exchange for that purpose.

The Board of Live Stock Commissioners then adopted rules as follows:

RULES PROVIDING FOR THE INSPECTION AND SLAUGHTER AT THE UNION STOCK YARDS, CHICAGO, OF ANIMALS AFFECTED WITH ACTINOMYCOSIS — ADOPTED BY THE STATE BOARD OF LIVE STOCK COMMISSIONERS.

RULE 1.—The Board shall appoint as State Agent at the Union Stock Yards, Chicago, an Assistant State Veterinarian who shall act under the direction of the board or any member thereof. The board shall appoint such assistant agents as it shall deem proper, who shall hold themselves subject to the order of the agent above provided for.

RULE 2.—The board shall establish an office in the Exchange Building at the Union Stock Yards.

RULE 3.—There shall be established by the Chicago Live Stock Exchange in the Union Stock Yards a quarantine pen conveniently situated, to be known as the "State Quarantine Pen," in which shall be placed all animals failing to pass an ante-mortem inspection.

RULE 4.—Any person, firm or corporation doing business at the yards, who shall have any animal or animals apparently afflicted with actinomycosis, commonly called "lumpy-jaw," shall immediately notify the State Veterinarian or Assistant State Veterinarian.

RULE 5.—Upon receiving any notice, as provided for in Rule 4, it shall be the duty of the State Veterinarian or Assistant Veterinarian, to inspect such animal or animals as soon as possible.

RULE 6.—The State Agent shall place in the ear of each animal examined a tag indicating whether it has passed or has been held for post-mortem examination. A round tag for "passed" and a square tag for "condemned."

RULE 7.—The State Veterinarian, or Assistant Veterinarian, shall keep a record of all animals inspected, which record shall show 1st, Date of inspection; 2d, For whom the animal is inspected; 3d, The description of the animal; 4th, The number of the animal; 5th, Weight of animal; 6th, The result of the inspection, and he shall furnish to the Secretary of the Live Stock Exchange each day at the close of business, a copy of such record signed by him; and he shall also file at the end of each month with the secretary of this board a copy of the record for that month.

RULE 8.—It shall be the duty of the state agent and his assistants to place in the "State Quarantine Pen," each day, all animals held for post-mortem examination.

RULE 9.—When any animal is held for post-mortem examination, and the owner thereof, or his agent, refuses to accept for each animal the exact amount fixed by any contract made for the slaughter of condemned cattle by the Live Stock Exchange, then such animal shall be held in quarantine until the same shall be duly appraised, as provided for in Section 2 of "An Act to revise the law in relation to the suppression and prevention of the spread of contagious and infectious diseases among domestic animals," approved June 27, 1885; in force July 1, 1887. This appraisel shall take into consideration the price obtainable for such an animal if condemned, and to be converted into material not used for human food. If such an appraised animal is passed by the duly authorized veterinarian after slaughter as fit for human food, then this appraisal shall ve void and the carcass revert to the owner, who shall pay for the cost of slaughter.

RULE 10.—All animals held for post-mortem examination shall be slaughtered as often as this board shall deem proper and necessary at a special slaughter-house, to be provided for that purpose by the Chicago Live Stock Exchange. The slaughter of said animals and the disposal of their carcasses shall be held under the supervision of a committee of three, consisting of the State Veterinarian, or one of his assistants, to be designated by this board, an officer appointed by the Board of Health of the City of Chicago, and a member of the Board of Directors of the Chicago Live Stock Exchange. Such condemned carcasses shall be immediately tanked and rendered unfit

for food under the personal supervision of the committee above provided for. Said committeee shall report to the State Veterinarian or Assistant Veterinarian, and also to the Secretary of the Ltve Stock Fxchange, the result of the killing. All carcasses found after slaughter to be healthy shall be held subject to the order of the owner or his agent.

RULE 11.—Nothing in the above rules shall be construed as abrogating the right as the State Board of Live Stock Commissioners or its agents to make such inspection of the yards as they may desire for the purpose of ascertaining whether all cattle afflicted with actinomycosis are duly reported to the veterinarian and subsequently rendered unfit for food.

The above rules were adopted by the State Board of Live Stock Commissioners at a meeting held in Chicago, July 16th, 1894, to go into effect July 23d, 1894.

(Signed) C. D. BARTLETT,
C. W. PIATT,
J. H. PADDOCK,
Commissioners.

Attest.

A. M. BROWNLEE, *Secretary.*

I hereby certify that the above rules are a correct copy of the rules adopted by the State Board of Live Stock Commissioners at a meeting held by said board in Chicago, Ill., July 16, 1894, all members being present, and said rules were to go into effect on Monday, July 23, 1894.

A. M. BROWNLEE, *Secretary.*

Springfield, Ill., July 17, 1894.

The board ordered a daily examination by an Assistant State Veterinarian of all cattle arrested since October 1, 1893. They also placed an additional number of agents in the yard to hunt up the affected animals, but all was of no avail towards securing satisfactory results.

Since the newly adopted regulations have gone into effect, our work has been eminently satisfactory, and we trust that everything connected with this system will continue to grow in favor.

The new system went into effect on the 23d day of July, and we are able to show the following results for weeks ending

	Cattle passed in the yards.	Held for p. m. examination.	Passed P.M.	Condemned and tanked.
July 28— 89	" 35	" 12	" 23	"
Aug. 4—122	" 54	" 15	" 39	"
" 11— 99	" 58	" 16	" 42	"
" 18—170	" 89	" 30	" 59	"
" 25— 76	" 50	" 15	" 35	"
Sept. 1— 88	" 52	" 17	" 35	"
Total, 644	338	105	233	

Twenty-four were condemned for being tuberculous — 2 steers, 20 cows, 2 bulls, and 2 were condemned as cancerous.

The receipts of cattle at the Union Stock Yards during this time were as follows :

For the week ending July 28th	50,714
" " Aug. 4th	69,959
" " " 11th	61,753
" " " 18th	64,893
" " " 25th	68,948
" " " 31st	65,123

By this we see that about one-quarter of one per cent. of the cattle received in the yards were in any degree affected.

Here in six weeks time the shippers got the benefit of 644 examinations of cattle that were very slightly affected ; they were, therefore, enabled to sell them at their full market value as healthy cattle. Under the old *regime* the lump-jaw buyers would have purchased at least four-fifths of them at one-half their market value.

To make the comparison clear between the old and the new system, I will present a report of the arrests from January 1st to July 23d.

Passed in yards.	Held for p. m. examinat'n.	Passed p. m. examinat'n.	Condemn'd.
731	794	229	565

We have a complete system for keeping the records of all animals examined in the yard, and I make a written report of the lesions found at the post-mortem examinations—the passed cattle, as well as those that I condemn. In condemning cattle I

act under the authority of the City Health Commissioner, having been appointed City Meat Inspector.

It has been questioned whether this board has the legal right to quarantine such cattle, if they are not considered dangerously inimical to the health of other cattle.

This is a question that would probably have to be decided by the courts, but so long as it can be carried out as a public health measure it surely ought not to be opposed by any right-minded citizen.

Chicago is the great cattle and beef market of the world. It is partly for the maintainance of the good reputation of this market of the west that this work has been inaugurated, while at the same time it gives protection to home as well as foreign consumers of our beef against the danger of contracting this formidable disease.

I believe that it is a great and a good work, and hope to see the time when all the states will enfore similar inspections at their large packing centers, abbatoirs, and stock yards.

THE EXTERNAL CONFORMATION OF THE HORSE.

By Prof. E. A. A. Grange, V.S., Michigan.*

(Continued from page 499 and Concluded.)

As far as I am able to conceive from my knowledge of the anatomy of the hind leg this circular motion can only be produced, without increased expense to muscular force, by the peculiar shape of the bones entering into the formation of the true hock joint, the action of which, as pointed out by Prof. Williams, of Edinburgh, is like a screw, and in our opinion there is little doubt but that this screw-like motion is continued down to the foot under certain circumstances. This screw-like motion is again important during rapid movements in trotting, especially in the horse with much hock action, as it prevents him from

*A reprint from Bulletin 110, Experiment Station, State Agricultural College.

striking the lower surface of the body during extreme flexion of the joint, the foot being wound in an outward direction as it ascends from the ground. The circular motion of the foot is sometimes called *dishing*, possibly because it occasionally gives one the impression that the ground is being scooped out or *dished* by it. Some horses exhibit the dishing movement much more perceptibly than others do, which indicates that the screw-like motion in the hock joint of some horses is greater than it is in others; then, if we are to regard the screw form of leverage as being the most perfect because it is the strongest, why other things being equal, the horse that dishes most will be the best performer, it does not matter whether it be under saddle, in the road wagon or at the plough.

Many years ago a gentleman once said to me that in the part of the old country where he came from they often used the expression, "a good disher means a good jumper." Our experience with horses rather verifies the truth of this expression, not only that they are good jumpers but good performers in a general way.

The shank (Plate I, 17) is the part below the hock and above the fetlock; it corresponds to the canon of the front leg, proportionately speaking it is a little longer, flatter and measures more in circumference. In shape it should be flat and deep from before backwards, the skin lying close to the bone and tendon—hard, flat legs being the ones which are best able to stand the trying work of the day. Those round, soft legs we so often meet with frequently prove a source of continual annoyance on account of being affected with grease or some other similar disease.

The parts below the shank are so much like the same parts in the front leg that they do not require any special description except to repeat that the foot is usually smaller and more contracted, with the sole more concave and the frog a little less developed.

Color.—It has been said from time immemorial that "a good horse cannot be a bad color," but we beg to take exception to

this ancient adage, for we believe that a bad color often spoils a good horse from an artistic standpoint at all events, which at once becomes quite a point for consideration when we place an animal in the market for sale, though we do not intend to infer that we believe that the color affects the merits of the animal as far as performance is concerned, but rather that it is just as necessary to have a good color to complete the *tout ensemble* of a stylish carriage horse or a high class park saddle horse as it is to have a well formed head for instance.

It is often said that color has some significance in judging of the temperament of an animal, but our investigations in this line have not led us to believe that there is any reliance whatever to be placed in opinions formed upon such a theory. It is true that many chestnuts are high spirited, but the same may be said of any other color. Temperament is controlled, in our opinion, by something deeper seated than the skin, most likely the chief organ of the nervous system, the brain.

It is also contended that the color has much to do with the individual comfort of the animal when exposed to the influence of the sun's rays, more particularly in the summer season, but our observation has not demonstrated the truth of this supposition, for as far as our knowledge goes dark horses are able to do just as much work without showing fatigue on the farm or the road as lighter colored ones. This may perhaps be accounted for by the non-conducting properties of the coat, for the hair being a non-conductor, it probably makes little difference to the parts beneath what color it is as far as transmitting the influence of the sun's rays is concerned.

The power to resist heat or cold is, we believe, invested in the constitution of the animal.

It was generally conceded by those Greek and Roman eqestrians who wrote before the Christian Era, that a good horse could not be judged by its color, although one of them goes so far as to say: "That a mane which is of the same color throughout and of fine hair is generally the best, and besides it is most unlike that of the ass and the mule." (See The Art of Horse-

manship, by Xenophon, translated by Morgan, page 108.) I cannot help thinking that the writer regarded the *mane* in the same light that we do the *coat* or hair covering the whole body, in which case it is evident that like many persons of to-day, his taste ran to solid colors, but he does not give any preference to shade. The primitive colors of the hair of the horse appear to be *white*, *red*, *black*, and *yellow*, all other shades or mixtures being simply modifications of one or more of them. If we infiltrate a few atoms of yellow into the white hair we get a cream, which is represented in the equine race by quite a variety of shades, according to the proportions of white and yellow.

If on the other hand we treat black and white in the same way, we get a dun color, which also has a variety of shades; while red and yellow, with some white, seem to produce the various shades of chestnut or sorrel, and bay as well as brown are no doubt produced by a delicate mixture of the four primitive colors. In some animals only one color is apparent, while in others it seems to take all four to produce the exact shade. The amount of coloring matter supplied to each individual hair is arranged by nature in many different ways so as to produce very different results. For instance, we find rings of certain shades surrounding spaces of other shades producing a dappled appearance, which is often admired, as the dapple gray, dappled bay or dappled brown, etc., etc., though we do occasionally meet with horses where the dapple does not improve the appearance. In other individuals we find the different colored hairs arranged so as to produce numerous shades of gray caused in a somewhat interesting manner by the predominance of one color or another; black and white producing iron gray; red and white, roan gray, or yellow and white, Isabella gray; the two latter with black hair produces roans of different shades, red roan or yellow roan, as the case may be. These, like all other shades, become light or dark according to circumstances.

We also meet with horses which are of two distinct colors, having sharp lines of demarkation between the one and the other. Indeed we have the difierent colored hairs arranged in

so many different ways, that it does not seem necessary to attempt to describe them all here ; while we occasionally have animals brought under our notice where the coat is of that peculiar tint that it becomes a matter of some difficulty to draw a line between one color and some other ; browns are sometimes so dark that it is hard to say whether they are black or brown, and similar instances come before us in other shades, the cream and the bay, the chestnut and the cream and so on.

In selecting horses for the market color plays an important *role* in the make up of the animal, so the use the creature is intended for should be given due consideration. If we want an animal for park saddle work solid colors take well, while in most instances badly marked pie-balds would not be looked at, although for the circus ring they might be most coveted ; again the dictates of fashion influence the demand and in some localities red roans will bring a higher price, all things being equal, than any other color. For farm work the darker colors generally look better and are less disagreeable in the warmer months of summer than white or other light colors. Extensive correspondence on the subject of color has demonstrated very clearly that much stronger prejudices exist amongst the patrons of the equine industry than is generally supposed, but happily the color does not, in our opinion, make any difference except for special purposes, this being the case we are all put at liberty to gratify our own tastes in selecting a particular hue.

Action and gait embrace those movements performed by the extremities during progression, and may be considered under three primary heads—the walk, trot, and gallop—with their various modifications, the running walk, the amble or pace, and the canter. These we regard as natural gaits since horses possess them through some natural predisposition or instinct. The artificial gaits or ornamental movements are those which are taught in the high school of horsemanship, and perhaps may be regarded as belonging more to the circus ring or tan bark of the riding school, than the ordinary commercial horse-world. They consist principally of the *passage*, a species of trot in

which the animal gathers itself into a rather showy attitude and progresses in a somewhat elastic manner, the *Spanish* walk, a most majestic movement in which the animal progresses in a remarkably precise manner, especially as far as its front legs are concerned; the *Spanish* trot bears a very strong resemblance to the walk, the majestic precise movements being very perceptible. There are many other high school movements which it is not necessary to mention here.

Although we have divided the gaits into two groups, it must be remembered that a natural gait in one horse may be entirely artificial in another; indeed we can hardly take up a live stock paper without reading of some converted trotter or pacer, as the case may be, while I have seen horses that did the Spanish walk or trot without an hour's training. Some horses cannot walk in the ordinary sense of the term, nor can others gallop, but so many are born possessing the first named gaits, that we feel justified in calling them natural, while the high school movements are obtained through training in nearly all instances.

In pursuing our investigations with regard to the gaits of the horse our chief aim has been to notice those movements which attract the attention of the rider or driver, and the more we inquire into this branch of our subject the more we are struck with the absolute necessity of selecting animals with the *correct way of going* if we desire to obtain the paying prices for our products when we offer them for sale. A gentleman from New York who has had a great deal of experience in the horse line in various capacities not only as an owner, but as a judge at the National horse show and other prominent exhibitions in the east, writes in reply to my inquiries that: "*A paragon of conformation and all the requisite virtues will bring $175–$300 here without action; one not half his equal in any particular, but with extra action will bring $700–$5,000. I have seen very poor individuals bring the latter price more than once.*" At the horse show of the Columbian Exposition I was much interested to observe the amount of stress exhibitors laid upon *action* in the draft classes as well as other breeds.

In pronouncing upon the action of a horse as being good or bad, due consideration must again be given to the use the animal is intended for, because what might be looked upon as good action for one class of work, would appear rather indifferent for some other ; take the saddle horse, and it is hard for the writer to conceive a more agreeable way of covering the ground than upon the back of a horse that has a nice long easy swing in the trot, going rather close to the ground, but with sufficient knee action to carry the toe well clear of all irregularities in the road bed, this with energy and moderate speed, goes a long way towards the make up of a good saddle horse ; but the same style in a coach horse would hardly pass muster if intended for fashionable city driving; in addition to this (for saddle work) we must have the horse to canter nicely, with a long easy stride, free from that short bucking motion so often noticed in badly trained or inferior animals ; the walk should be energetic, fast and smooth, with plenty of elasticity to modify concussion. In some localities and with some persons the running walk is indispensable in the makeup of a first class saddle horse. The harness horse should be a good walker, a free, bold trotter with plenty of knee as well as hock action ; the former must not only be high, but it must be far reaching so as to carry the foot through a telling space at every stride and do away with that short choppy action sometimes described by an old saying "that such and such a nag will trot all day in a bushel basket," while the latter must bend the joint thoroughly, bringing the foot and curved pastern up from the ground in a sharp decisive manner, carrying them well forward and lowering them with energy and precision that reminds one of the movements of a clock, all jerky movements that indicate string halt being carefully avoided.

For slow draft work upon the farm road, or in the city, the walking gait is even of more importance than any other, so much so that some agricultural societies award prizes for the best walker, an innovation to be highly commended.

Having disposed of the external conformation of the horse

in a somewhat summary manner, let us turn for a moment to scales of points used in judging horses. In order to demonstrate the position we have taken with regard to them, we reproduce our advance bulletin upon the subject, but wish to say in addition, that from information gained from numerous contributors we think the most satisfactory way to arrive at a scale of points which could eventually be looked upon in the light of authority, would be through a National or International congress, made up of delegates from the different breeds and classes of horses, and let their decision as to what is required govern all *association show rings*.

The replies to the advance bulletin are to be counted by the hundreds, and, after reading them all carefully, the conclusion reached was that if it were possible to put them into a bag and shake them up thoroughly, the scale of points as we have arranged them would come out with so little change that one would hardly recognize it, although many writers took exception to the intrinsic value of all points on the body of a sound horse being equal (in this case a value of 5), some saying that the hock is of more importance than the head and consequently should have more points; but (leaving unsoundess out of the question), does not the head as often spoil a good horse as the hocks? Another says it is hardly fair to allow as much for the croup and dock as it is for the chest, but are there not as many horses injured from illy formed croups and crooked docks as from badly formed chests? And similar questions may be asked throughout the entire list.

It has also been suggested that one score card be arranged that will include all breeds and classes, the strong points of the different kinds of animals being emphasized in such a manner that they are not liable to be overlooked.

These and other questions are the ones which we think can only be settled by a congress of representative horsemen. We do not presume to offer anything more than the suggestion here.

Some horsemen are strongly opposed to judging horses by scales of points, and while there may be many good reasons why

men of extensive experience in such matters should be permitted to form their own opinions after the fashion of time-honored custom, yet there are cases where, even to the most experienced a standard of excellence would prove itself a very great convenience. The writer can call to mind a case of judging horses at an agricultural fair in a rural district, and in a draft class the horses were finally brought in line for inspection, but much to our dismay there was not what we would regard a draft horse in the lot, they were all under size ,and too light, but the first prize was, with much reluctance, eventually awarded to a handsome little pair of stout cobs, just such a pair as would look well before an ordinary express wagon, where moderately fast work was required, but entirely out of place in the draft truck, where the speed is seldom beyond the walking gait; certainly they might have been thrown out altogether, but there was no authority for such a procedure, nor did previous custom in that locality warrant it. On another occasion a line of saddle horses was presented; amongst them was a grand colt, with proper action and all the necessary requisites for a saddle horse, in fact as far as conformation and style went he was the only true type of a saddle horse in the lot, but he had one wall eye, a rat tail, and was of a most objectionable color, being pie bald on the hind quarters, mostly bay on the barrel and sides of the chest, and an indefinite roan on the neck and shoulders. He did not get the first prize! although there were those there who thought he should have had it, and perhaps not without good reasons, but the variegated coat, the wall eye and the rat tail were so far from our ideas of a good saddle horse in the ordinary acceptance of the term that the prize went to another animal far inferior in point of merit. The propriety of these and similar decisions must remain open questions until the more salient features or essential factors in the makeup of a certain class of horse is defined by a recognized standard or scale of points. When this is produced the student can then form an intelligent opinion, within certain limits, as to what may be accepted or rejected in any named class, while those of more extended appearance will

have authority for supporting their opinions in cases where lines have to be drawn between one class and another, and breeders will be encouraged to breed more to type than they are at the present time.

We think that in judging horses by scales of points, each and every point should be valued according to its merits as compared with the same point in other animals which are in the ring and before the committee for award, and not by its supposed importance or relative value as compared with other points in the same animal in a standard which allows say 100 or 1,000 as the maximum of the aggregate of all the points. By the former method the judgment at once evolves into the question of *good*, *better*, *best*, at each point, easier, however, to express by figures, and it ensures thorough inspection of all the parts before they can be pronounced upon intelligently, a procedure in itself to be highly commended.

REPORTS OF CASES.

SEPTICÆMIA, RESULTING FROM A KICK.

By O. Fausner, D.V.S., House Surgeon.

On July 27th, there was a large iron-gray gelding, seven years of age, admitted to the hospital, with the following brief history, animal was kicked on the near hind leg, at the lower third of the tibia, the entire leg was œdematous, and on close examination a small opening was found, this was probed, and the track extended to the bone; was also found that the periosteum was gone; a slight amount of pus began to flow when the probe was removed; owner said the horse was kicked about eleven days ago; a veterinary surgeon was called in, said it was a trifling wound, and the horse would be able to work in a few days; treatment was hot fermentations and apply ice packs to the head, this not being successful, the owner called at the hospital.

Animal was hardly able to stand, was put in a sling and

made as comfortable as possible, the track was very small and no pus could escape, above the opening slight pressure showed there was fluid, an incision was made with good results, quite some pus escaped, temperature 104, respiration and pulse very rapid, animal refused to eat; wound was injected antiseptically, also internal antiseptic were used.

Second day temperature reduced to 100 3-5°, respiration 52; eating a few carrots; seemed to be very nervous, raising the leg continually above the hock; an incision was made, quite some pus escaped, animal seemed to be in great pain, never resting on that leg.

Third day, temperature 105°, pulse 102, respiration 80, not eating, very anxious expression, another incision was made also with good results, temperature reduced to 103°.

Fourth day, temperature 100 4-5°, pulse was 98, respiration 48, eating a little gruel, but still very nervous, all the tracts was discharging freely and seemed to be doing nicely.

Morning of the fifth day was found dead in the sling, with a complete fracture of the tibia.

Post-mortem was held which certainly was interesting, the fracture was complete, in a oblique direction and incomplete in a vertical direction, reunion had partly taken place and very extensive periostitis the entire length of the fracture; about two inches above the fracture, the tissues were black from clotted blood, also a number of small pieces of bone were attached to the tissues, the lungs were the seat of multiple abscesses and congested, heart was normal and contained an antimortem and post-mortem clot.

SKETCHES FROM THE LAST MEETING OF THE U. S. V. M. A.

President, W. Hoskins, received a well deserved re-election at the last election of the new board of officers. His efforts as president did not, however, succeed as well as when he was secretary.

The fees of the members have been raised to fill the rather diminutive plethora of the treasury.

Dr. Williams, of Montana, was rewarded for his long journey and for his good paper by a re-election to one of the vice-presidencies.

The banquet was most attractive and went on very well, notwithstanding the early retirement of one familiar face who was to respond to his favorite toasts.

Visits at the veterinary department of the University, at Dr. Hoskins' private hospital and at the Zöological Garden, were among the most attractive closing exercises of the meeting.

Prof. Liautard, the Chairman of the Committee Minora, was much needed during the first days of the meeting. Conspicuous by his absence, he only arrived towards the last two days of the meeting.

Prof. J. L. Robertson, the well selected old treasurer, received marks of the great confidence the members had in his integrity; he was also re-elected to take care of the financial wealth of this association.

Prof. Salomon, the solid chief of the Bureau of Animal Industry, revealed himself as the defender of the two years school. His arguments were so powerful (?) at the meeting of the colleges, that no one dared to answer them.

The likenesses of several members of the association (Dr. Salomon, Hoskins, Williams, Robertson, Lyman, etc.,) which were illustrating the journals of Philadelphia, were scarcely *chefs d' œuvre* in an artistic point of view.

Prof. Lyman was most gratified by his appointment to the presidency of the Hybrid Association of the faculty of colleges —a mixture of two and three years school requirements. An association born of the United States, but now an independent body.

Prof. Schwarzkopf returned to Chicago not very well pleased or convinced with Dr. Salomon's defense of the two years' graduates, that this latter claimed was equal if not superior to the three years' students.

Prof. Hagar reported a most interesting case of cardiac abnormally which he first illustrated by well made photographic views, and later on by the natural dissection exhibited in his laboratory at the Veterinary Department of the University.

The reports of Prof. Pearson, Drs. Trumbower and John Faust, from the committee on tuberculosis, brought on a long discussion which was hastily closed by Dr. Miller, who moved to adjourn for the excursion prepared by the committee of arrangements.

If one can look back to the first year of the organization of this association, 1863, we believe, and glance at the last meeting in Philadelphia, he cannot help but salute and admire the good old face of Dr. I. Michener who, notwithstanding his seventy odd years, was there on the first bench among the listeners, and if unwilling to take part in the discussion, felt very proud of the advance that his profession has made and for which he worked so hard.

BIBLIOGRAPHY.

Bovine Prescriber. By James B. & Albert Gresswell. Bailliere, Tindall & Cox, London.

The authors of this little work are already well known to the profession at home as well as abroad, and their numerous writings are familiar to all of us. The *Prescriber* is an addition of much value to the literature of bovine pathology, which our practitioners will not fail to appreciate.

The Sheep; *Management in Health and Diseases*. By G. Armatage, M.R.C.V.S. Frederick Warne & Co., London and New York.

Works of any value relating to this valuable domestic animal are rather uncommon, and on that account anything which is to be presented to the ovine breeders and medical attendance is not to be overlooked. We certainly have enjoyed the recent work of Mr. Armatage, and can recommend it to our readers as one which, in its 200 pages, will present in the twenty-five chapters all the preliminaries necessary to the cares and management of sheep.

Traité de l'age des Animaux Domestiques. Treatise of the age of the domestic animals. By Prof. Chas. Cornevin & F. Lesbre, of the Veterinary School of Lyons. J. Bailliere & Fils, 18 Rue Hautefeuille, Paris.

Since 1824, when J. Girard published in book form his first treatise on the age of the horse, many books have been presented to veterinarians and breeders of animals in almost every language, and probably none has received more success than the part of the work of Goubaux & Barrier's "External Form of the Horse," which was so well translated by Prof. Harger, and published by a well-known house of Philadelphia, or that of Dr. Huidekoper, and yet in this last publication of Prof. Cornevin & Lesbre we find some facts which are missing in previous works, and elements of close observation. The work is divided into twelve chapters, and covers the wide field of the age of domestic animals, from the horse down to the fowl. Over 200 illustrations serve to present to the reader characters of ages which will help considerably in the practical application of the *theoretical* demonstration given in the entire work.

Traité d'Obstetrique Vétérinaire. Treatise of Veterinary Obstetrics. By F. St. Cyr & J. W. Violet. Asselin & Houzeau, Paris.

We have just received this most important work. We reserve the consideration of the entire book at the latter period,

but are at liberty to announce that arrangements have been made to present it to our American readers at an early date. It is the most complete work on the subject.

NOTICES OF BOOKS RECEIVED, JOURNALS AND EXCHANGES.

Syllabus on Human Embryology. An Introduction to the Study of Obstetrics and Gynæcology. For medical students and practitioners. With a glossary of embryological terms. By Walter Porter Manton, M.D., Professor of Clinical Gynæcology and Lecturer on Obstetrics in the Detroit College of Medicine; Fellow of the Royal Microscopical Society, of the British Zoölogical Society, American Microscopical Society, etc., etc. Illustrated with 70 outline drawings and photo-engravings. 12mo. cloth, 126 pp., interleaved for adding notes and other illustrations, $1.25 net. Philadelphia: The F. A. Davis & Co., Publishers, 1915 and 1916 Cherry Street.

Journals.—Veterinary Record. Revue Vêtérinaire. Annales de l'Institut Pasteur. Veterinarian. Veterinary Record. Recueil de Medecine Vêtérinaire. Journal de Medecine Vêtérinaire et de Zootechnic. Journal of Comparative Medicine and Veterinary Archives. Veterinary Magazine. Annales de Medecine Vêtérinaire (Brussells). Progrès Vêtérinaire. Clinica Vêtérinaria. l'Erconali. Giornale d' Medicina Veterinaria Pratica (Torino). Der Hufschmied. Gaceta de Medicina Veterinaria (Madrid). Therapeutic Review. Medical Rccord. New York Medical Journal. Revue für Thierheilkunde und Thierzuesch. Berliner Thierarztliche Wochenschrift. Journal of Comparative Pathology and Therapeutics. Buchandlung für Medicin und Naturissenschaften.

CORRESPONDENCE.

VETERINARY EDUCATION.

Editor AMERICAN VETERINARY REVIEW:

SIR.—It is certainly quite interesting for western veterinarians to read the article in your last issue from Olof. Schwarzkopf, dean of the newly-established McKillip Veterinary College in Chicago.

Is the doctor really in earnest when he states that "the bulk of graduates from the two-year-colleges are nothing more than rough-and-tumble practitioners," or is he trying to boom the (new-born) school of which he is dean.

It is a very easy matter to name all the past and present veterinarians at experiment stations in the western states, and the greater number of them are members of the United States Veterinary Medical Association, so the doctor must be careful or he may lay himself liable to expulsion from membership in the association, at least a similar statement made by the writer, regarding some men who had worked their way into the United States Veterinary Medical Association, which appeared in the REVIEW of November, 1891, was the cause of our application for membership being rejected by the Comitia Minora in 1893.

But when Dean Schwarzkopf declares that the bulk of graduates from the two-year-schools, which includes New York, Montreal, Toronto, and Chicago, are little above the old-time quack, it is time to call a halt.

It seems strange that the doctor has as his colleagues on the faculty of this anti-"diploma mill" (the McKillip College), men who have come out of those so-called "diploma mills."

Probably the dean would make the matter more clear if he would at once name the particular mills he referred to, and thus do justice not only to himself, but also to schools which have been a credit to the country.

The question naturally arises, is it possible that men taught in these two-year-schools ("diploma mills") are capable of turning out—or rather educating such high-class practitioners as pictured by Dean Schwarzkopf. Say dean, can water rise above its own level?

The writer has always been an admirer of Dr. Schwarzkopf, and we are sorry to see that he has made such a wholesale onslaught upon the "bulk of graduates from two-year-schools."

We are in entire harmony with the movement for a more strict matriculate examination, and a three years course of study, and hope to see it brought about with as little friction as possible.

The McKillip College, like every other veterinary and medical college, will turn out incompetent practitioners, and some of them may even become "bums," but it will be too bad if the dean or the McKillip College should be traduced for graduating such men. A man may be apt to learn, and may pass his examinations, while at the same time he may never be a good reliable practitioner.

While all progressive veterinarians desire a longer course of study by the various veterinary colleges in the United States and Canada. We also believe that there should be some special qualification for teachers in the different schools. It is not so much the two-year-term as the grade of teaching. You may matriculate a master of arts, but if he sits in a veterinary college for six years, being taught by incompetents, he will not graduate with as much knowledge of the art as he would do in a two-year-school, conducted by competent teachers. The attention of the profession should be directed to the grade of teachers, as well as to the length of course. How can the system of establishing colleges by a few individuals irrespective of their own qualifications be kept in check (?) Only by state or national legislation.

Wishing the dean of the new anti-"diploma mill" success in his new venture. And with best wishes for the success of higher education in veterinary colleges.

I am, yours truly,

D. A. CARMACK.

Brookings, S. D.

NOTES ON THE METHOD OF SPAYING BITCHES.

Editor AMERICAN VETERINARY REVIEW:—

DEAR SIR:—In a paper on the above subject, published in your journal last April, but which has only just fallen under my eye, the following appears: "Before proceeding, I must stop a

moment to heartily endorse Prof. Wesley Mills' remarks on the propriety and usefulness of the operation. The public, however, demand it, and so far as the writer is concerned, they shall have it." I presume the writer of the paper refers to my views as expressed in my work "The Dog in Health and in Disease," and as it might possibly be supposed from the quotation above cited that I did consider the operation proper and useful, I wish to leave no doubt about a matter in which I hold very decided opinions. I therefore crave space for the remarks on page 387 of my book: "It is impossible to predict what effect on the physical and psychic nature of the dog these operations may have. After ether the subject may be little more than a useless, animated mass of flesh, unworthy the name of 'dog.' The author would not allow any dog he owned to be thus operated on, nor could he be induced to perform it except when the parts are *diseased;* and he hopes the time is not far distant when every reputable veterinary surgeon will take the same view of the case, and absolutely refuse to thus run the risk of destroying the dog, as a dog, merely to gratify the whim of some owner who wishes to shirk his responsibility. Every man should either not keep a dog at all or treat the animal as a dog. A spayed or castrated dog cannot win a prize on the bench."

My views remain precisely the same as when the above was written. While I see much to admire in the method of performing the operation as described by Dr. Francis, especially the attention to antiseptic details and to anæsthesia, I could have wished that if the doctor really agrees with the views I have published he had shown as much moral courage as candor, and made his actions correspond with his convictions; for so far as I can see, it is only when the practitioner does so that he rises above the moral level of the quack.

WESLEY MILLS,

Faculty of Com. Med. and Vet. Science,

McGill University,

Montreal.

LEGISLATION IN OHIO.

Editor AMERICAN VETERINARY REVIEW:—

DEAR DOCTOR:—In the August number of the REVIEW (which arrived a little late), we noticed your editorial calling attention of veterinarians to a veterinary law passed by the Ohio Legislature at its last session; you especially calling attention to Sections 4 and 9.

My friend, Dr. Ball, must have sent you a pamphlet copy of the law, as it was at first printed; for let us assure you, Doctor, that the good points of this law which you call attention to, were completely eradicated from it previous to its final passage.

I have before me "Laws of Ohio 1894," and on page 391 is the law entitled, "An Act to Regulate the Practice of Veterinary Medicine and Surgery." Take the August number of the REVIEW, and with your pen make the following additions and corrections, and then read the bill, and your opinion will most likely be reversed.

SECTION 1.—Third line erase the word "exclusively." At end of third line change "five" to "three." Between the words "act" and "shall" in fourth line, add "in the State of Ohio."

SEC. 3.—Third line, change the word "ten" to "five." Erase the words "prior to the passage of this act."

SEC. 5.—First line between the words "meet and twice," add the words "at least."

SEC. 8.—Second line and fourth line change the word "ten" to "five."

SEC. 9.—Third line erase the words "trree years."

SEC. 10.—Left hand of third line, after the word dollars, add the words "nor more than twenty-five dollars." Sixth line change the word "assistance" to "service."

You see, doctor, that Sec. 1 practically allows any person who has drenched a horse occasionally inside the last three years to be entitled to practice Sections 7 and 9; also practically allowing the board unlimited power as to rejections, even to diplomas, with no recourse to the candidate, only to try over again in a year at a cost of $2.50 more. Yours,

WM. H. GRIBBLE, D.V.S.

VETERINARY LEGISLATION.

NORFOLK, Va., Sept. 29, 1894.

Editor AMERICAN VETERINARY REVIEW:

I have read with a great deal of pleasure your editorial urging the appointment of State Boards of Examiners. The more of the states that have them the sooner may we look for a National Board. You allude in your editorial to the act which you published as having been passed in Virginia. I am sorry to be obliged to correct the statement.

Evidently you have Maryland in mind. The only act that has ever been passed in this state that in any way recognizes the veterinary profession was passed last February. It was an Act incorporating the Virginia State Veterinary Medical Association.

The veterinary profession of this state had agreed upon such a bill as they desired. A petition was signed by almost all of the graduated veterinarians in the state, asking for the bill. But the empyric influences in the legislature were too much for us. A communication published in the June number of the REVIEW, states that the bill that has been introduced, was defeated by this association. That statement was false in every particular, and did certain gentlemen a great injustice. The bill first introduced by them was not fully satisfactory to some other veterinarians in the state. A compromise bill was then introduced, after having the support of nearly all the graduates in the state, and it was referred back to the committee. All this before this society was organized.

This association is now thoroughly organized, and we hope for great results. We believe that with earnest, concerted action, we can accomplish much valuable legislation at the next session of the legislature.

Virginia does *not recognize the title of veterinarian*, much less *protect the title.*

The next regular meeting of the association will be held at Charlottesville, on January 3, 1895.

GEO. C. FAVILLE, D.V.M.,
Secretary Virginia State Vet. Med. Association.

AN EASTERN VETERINARIAN'S ESTIMATE OF CALIFORNIA QUACKERY.

(Paragraph from a private letter.)

This section of the country is rank with what is called the old-time horse doctor, otherwise known as the quack, each with his own specific for lung fever, etc.; and, though they have lost a great many cases, it is strange the amount of confidence the public still retain in them. I met one the other day who did not believe in the administration of internal medicines, but is accustomed to slapping on a blister, with the remark that he has had twenty-four years' experience in the business, and if this does not do he don't know what will. Yet the man has a yearly contract with an ice company manufacturing artificial ice, and they have twenty-six fine horses in the stable under his care, besides the rest of his practice in that section of the city.

Besides this man, I have met a fellow claiming to be a specialist on castration—claiming to be the best in the United States, and a more slovenly, dirty farm-hand it would be almost impossible to meet. The woods here are full of just these kind of men, and yet a board of examiners, consisting of graduated veterinarians, appointed by the state, allow these men to pass a bogus examination, and to go forth with a state certificate, fully licensed to practice veterinary surgery and medicine. They can talk of their societies, and the promotion of harmony in a profession, but where could there be harmony, or friendly discussion, where one-half the members would not understand what the other half were saying?

I merely write this to give you some idea of the situation of things in the far west, and also some of the men I have to contend with. I think this place is at least twenty-five years behind the age in this profession, and no doubt it will take some time before the public will be able to discriminate between the old horse doctor and the modern veterinary surgeon; still, time will tell.